

Certification Evaluation Report for the Natural Forests Managed
by
The Commonwealth of Massachusetts
Executive Office of Environmental Affairs
Conducted under auspices of the SCS Forest Conservation Program
As Accredited by the Forest Stewardship Council

A NATURAL FOREST MANAGEMENT OPERATION

CERTIFICATION REGISTRATION NUMBER
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INTRODUCTION- EOEA Reorganization

Between the time of the initial report (December 2002) and the award of certification (May 2004), the Commonwealth of Massachusetts Departments that were the subject of this evaluation underwent reorganization. The Department of Environmental Management (DEM) and Metropolitan District Commission (MDC) were merged within the newly created Department of Conservation and Recreation (DCR). The former DEM Bureau of Forestry remains a bureau within the new DCR. The State Forests and Parks previously managed by the DEM Division of Forests and Parks are currently under the DCR Division of State Parks and Recreation. The former MDC Division of Watershed Management is now the major component of the DCR Division of Water Supply Protection. The Division of Fisheries and Wildlife was not reorganized, although the parent agency changed its name from The Department of Fisheries, Wildlife, and Environmental Law Enforcement to the Department of Fisheries and Game. The Division of Fisheries and Wildlife remains unchanged. The fundamental personnel assignments and management directives for the lands that were certified as "DEM", "MDC", and "DFW" remain substantially the same in May 2004 as they were during the SCS audit.

Because this document was written prior to the reorganization, it reports the names of the departments (DEM, DFW, MDC) from the time of the original assessment.

- "DEM" refers to the 285,000 acres of State forests and parks managed by the DCR- Division of State Parks and Recreation
- "DFW" refers to the 110,000 acres managed by Department of Fisheries and Wildlife- Division of Fish and Game
- "MDC" refers to the 104,000 acres managed by DCR- Division of Water Supply Protection.

Additionally, this report communicates the findings as observed during the August 2002 evaluation. *Since that time substantial progress has been made in addressing many of the areas of non-conformance. More detail on the progress of meeting the conditions and the reorganization can be found in Section 10.4 (pp 158-173).*

1.0 SUMMARY

Scientific Certification Systems, a certification body accredited by the Forest Stewardship Council (FSC), was retained by the Commonwealth of Massachusetts to conduct a certification evaluation of state lands managed by the principal agencies of the Executive Office of Environmental Affairs (EOEA):

- Department of Environmental Management (DEM) – State Forests and Parks - 285,000 acres
- The Department of Fisheries and Wildlife (DFW) – Wildlife Management Areas (WMA's) - 110,000 acres
- Metropolitan District Commission (MDC) – Watershed areas surrounding the Wachusett, Sudbury Reservoirs and the Ware River - 45,000 acres

- Re-certification of MDC lands surrounding the Quabbin Reservoir
59,000 acres

Under the FSC/SCS certification system, forest management operations meeting international standards of forest stewardship (i.e., the FSC Principles & Criteria) can be certified as “well managed,” thereby enabling use of the FSC endorsement and logo in the marketplace.

An interdisciplinary team of natural resource specialists was empanelled by SCS to conduct the evaluation. The team collected and analyzed written materials, conducted extensive interviews, and completed a two-week field audit of the subject properties in the course of conducting the certification evaluation. Upon completion of the fact-finding phase of the evaluation, the team assigned performance scores to evaluation criteria in order to determine whether award of certification was warranted.

This report is issued in support of a recommendation to award FSC-endorsed certification, with conditions, to the EOEA for the lands managed by DEM, DFW and MDC. The Pre-conditions that were originally stipulated for the lands managed by DEM have been fulfilled, and are now replaced with conditions stipulating that the work is completed. This report will be posted to the SCS website at www.scscertified.com.

1.1 NOTABLE STRENGTHS AND WEAKNESSES OF FOREST MANAGEMENT BY EOEA AGENCIES

As elaborated upon later in this report, the certification evaluation team observed circumstances and resource conditions that can be clearly characterized as indicative of exemplary forest management and circumstances and conditions below the exemplary threshold.

Whereas certification is awarded on the basis of scores assigned to the SCS Forest Conservation Program evaluation criteria (which are endorsed by the FSC as “interim standards” for use in regions without approved FSC Regional Standards), certificate holders must also be expressly found in compliance with the FSC principles.¹ Under the accredited SCS protocols, this is assured mathematically by computing scores for the FSC principles through the FSC approved cross-referencing of SCS Criteria to the FSC P&C. Scores for FSC principles below 80 points or failure with respect to a fatal flaw guideline precludes award of certification regardless of the strengths in other program areas.

In the judgment of the evaluation team, the DEM, DFW and MDC management programs applied to their forestlands, while having observed deficiencies, are on balance

¹ Principle-level compliance does not assume or require compliance with each of the criteria that elaborate upon a FSC principle. Instead, it is required that certified operations, over the total scope of each principle, be deemed compliant.

substantively compliant with each of the relevant FSC principles (principle 10, on plantations, is not applicable to these natural forest management operations). Therefore, the team concludes that the observed deficiencies do not constitute FSC principle-level non-compliance. As such, specification of conditions for DEM, DFW, and MDC, rather than preconditions, is warranted.

In Table 1.1.1, we present a summary of the strengths and weaknesses as observed by the evaluation team, formatted according to the FSC principles. In all cases, the team found that the strengths sufficiently outweigh the weaknesses so as to enable a finding of principle-level compliance.

Many of the weaknesses identified in the original assessment have or are currently being addressed. A summary of developments and progress on meeting the conditions is attached in Appendix 10.4. Most notably EOEA has committed to capital spending plans for major investment to meet the conditions outlined in this report. This investment is supported by several of the statewide conservation organizations. The planned investment on the capital spending plans for DEM and DFW over the current and next three fiscal years totals over \$1.2 million for projects to meet SCS's conditions. In addition to this commitment, DEM has agreed to transfer two full time staff (one forest planner and one GIS analyst) to work on completing forest plans and to oversee DEM's capital contracts. Currently, both DEM and DFW have contracts that have been awarded for these purposes.

TABLE 1.1.1

FSC Principle & Subject Area	Strengths	Weaknesses	Pre-condition Condition -
Principle 1: Commitment and Legal Compliance	<p>EOEA operations appear to be in compliance with all binding international treaties and conventions.</p> <p>Staff knowledge of the relevant legal framework was exemplary, as was the application in the field.</p> <p>Statutes were frequently discussed, and agency staff have a good working knowledge as well as a good attitude about application.</p> <p>There is very little historic or active litigation against Commonwealth forest managers.</p>	<p>DEM is clearly mandated by statute to produce management plans, although the statutes evidently do not specify any sideboards on these plans. Although DEM believes they are meeting the requirements of the Commonwealth statutes regarding management planning, the Team found management planning below that expected for FSC-certified forest management operations.</p> <p>DEM, DFW, MDC management plans do not specifically endorse FSC's Principles and Criteria.</p>	<p><u>Pre-Condition DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p>

Principle 2: Tenure & Use Rights & Responsibilities	<p>The status of the defined forests area as state forestland of Massachusetts is well established in statute and case law.</p> <p>Various stakeholder groups indicated they would like to see more public land made available for their particular interest (i.e., timber harvesting, ATV use, wilderness areas), but, overall, the EOE 5 should be recognized for the success it has had to-date in balancing a wide variety of public use rights, with the one notable exception being the level of timber harvesting on DEM properties.</p>	<p>Lack of a clear public involvement process leaves DEM generally ineffective in utilizing the public to help develop, modify, or implement management plans and activities.</p> <p>The evaluation team visited several sites where boundaries were not marked and where maintenance of boundaries was deficient (FSC Standard 2.1(b)). Stakeholder interviews also cited this as a chronic problem, as did DEM and DFW staff.</p>	<p><u>Condition DEM/DFW 2002.11</u></p> <p><u>Condition DEM/DFW 2002.12</u></p>
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Principle 3: Indigenous Peoples' Rights	<p>Based on interviews with tribal representatives, EOE 5/4/04 agency interactions with the state's recognized tribes have been limited, but positive.</p> <p>MDC: protection of cultural resources has been folded into the management planning process.</p>	<p>DEM and DFW are not taking seriously enough their obligation to manage historic and cultural properties as public assets in trust on behalf of the people of the Commonwealth.</p> <p>Although some of DEM and all of the DFW foresters exhibited sensitivity to historical sites (e.g., stone walls and cellars) there is little focus on pre-historical archeological sites.</p> <p>Unlike MDC, protection of cultural resources has not been folded into the management planning process for DFW and DEM.</p>	<p><u>Pre-Condition DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p>
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<p>Principle 4: Community Relations & Workers' Rights</p>	<p>EOEA has shown good initiative in seeking FSC certification of their public lands.</p> <p>For all agencies, staff at all levels have an "open door" policy in responding to individual concerns and often seek out specific stakeholders in an effort to understand their perspectives or to acquire information.</p> <p>All agencies, both at the headquarters and the field level, make a concerted effort to inform the public of their land management activities by sending relevant information to interested groups and individuals.</p> <p>All agency staff are well integrated into their respective communities of residence. They reside in the vicinities of the forest areas they manage, thereby helping to reinvest in the local communities through involvement in community activities and civic organizations, as well as through purchasing of goods and services, locally.</p> <p>Agency personnel participate in ad-hoc and standing committees concerned with land management and forestry issues.</p> <p>Most of the timber contracts and road work are awarded to local businesses.</p>	<p>Although wood is usually harvested by local loggers, it is commonly processed in mills in northern New England or Canada.</p> <p>Lack of a clear public involvement process for key activities (e.g, management planning) leaves DEM and DFW generally ineffective in utilizing the public to help develop, modify, or implement management plans and activities.</p> <p>Most DFW and DEM public involvement is done on an issue-by-issue basis, lacking the benefits associated with strategic comprehensive planning such as that done by MDC.</p> <p>The combination of staff reductions and increasing work loads is placing strain on EOE 5/4/04 employees.</p>	<p>10</p>
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<p>Principle 5: Benefits from the Forest</p>	<p>There is absolutely no evidence of over-harvesting or non-sustainable timber extraction on any EOE 5/4/04 lands, or any evidence whatsoever that financially driven harvest strategies override ecological issues.</p> <p>Recent management on DFW and DEM lands has been extraordinarily conservative, to the point where under-harvesting is the main concern.</p> <p>Two agencies (MDC and DFW) have clear, albeit very simple, forest regulation strategies based on a target forest structure, to be achieved by area-controlled harvests apportioned appropriately between single- and multi-aged stands.</p> <p>MDC's regulation strategy is explicitly designed to be robust against the region's major natural disturbance, a severe hurricane, though it will be many decades before the target forest is achieved.</p> <p>EOE 5/4/04 is considering FSC certification to ensure that agency practices satisfy sustainability criteria and to improve market diversification.</p>	<p>DEM effectively lacks a current viable forest regulation strategy and thus does not meet the key indicator 5.6 for this Principle</p> <p>Unauthorized OHV use is problematic on DEM and DFW lands</p> <p>Roads are an asset, but can quickly become liabilities if not properly maintained. Although many roads have been "inherited", the agencies have little capital capacity to construct, reconstruct, or maintain road systems.</p>	<p><u>Pre-Condition DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p> <p><u>Condition DEM 2002.12</u></p> <p><u>Condition DFW/DEM/MDC 2002.14</u></p> <p><u>Condition DEM/DFW/MDC 2002.15</u></p>
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	<p>All three agency budgets have been relatively stable, as indicated by trends for the past 5 years.</p> <p>DEM, DFW, and MDC management decisions are ultimately driven by resource conditions rather than exogenous financial demands.</p> <p>MDC enjoys a budget that allows for active, sustainable management most consistent with the FSC standard, and also generates substantial revenues.</p> <p>Inter-generational obligations (e.g. retention of species diversity, protection of water courses and vernal pools, retaining and creating den trees) are increasingly considered in forest management practices.</p>		<p><u>Condition DEM 2002.2</u></p> <p><u>Condition DFW 2002.3</u></p> <p><u>Condition DEM/DFW 2002.13</u></p> <p><u>Condition DEM/DFW 2002.14</u></p>
Principle 6: Environmental Impact	<p>Foresters in all three agencies are very aware of the significance of land-use history and of natural disturbances in determining the condition of today's forest composition and structure.</p> <p>Foresters in all three agencies are sensitive to the importance of site conditions and threats of non-native species when developing prescriptions for management.</p> <p>MDC and DFW have mandates for</p>	<p>All three agencies need to work together, and with others, to better establish goals and targets for landscape diversity.</p> <p>DEM and NHESP personnel need to improve communications and work together in the planning stages of forest management on State Forests and Parks.</p> <p>DEM needs more consistent access to advice on wildlife management, preferably a member of the staff, or a cooperative agreement with DFW to</p>	<p><u>Pre-conditions DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p> <p><u>Condition DEM/DFW 2002.7</u></p> <p><u>Condition DEM/DFW 2002.8</u></p>

	<p>management that are inherently compatible with landscape-level management for diversity.</p> <p>In assessing their ownership for High Conservation Value Forest, MDC and DFW make effective use of a unique spatial database of 1830s forest lands to identify lands that have remained in forest since pre-settlement</p> <p>The evaluation team observed no evidence that hazardous chemicals have been misused or disposed of incorrectly.</p> <p>Foresters in all three agencies seem to appreciate the importance of reserves and have not harvested areas that might have reserve-quality stands.</p> <p>MDC foresters and managers have identified a substantial proportion of their ownership as suitable for reserves and have mapped and designated such areas in their management plans.</p> <p>Natural Heritage and Endangered Species Program within DFW maintains a detailed database of the locations of rare elements: species of plants and animals, natural communities, and special habitat. A registry of certified vernal pools is</p>	<p>provide such expertise.</p> <p>The three agencies have not worked together or with other conservation organizations to plan comprehensively for reserves in Massachusetts.</p> <p>Ecoregional plans developed by The Nature Conservancy should also be considered.</p> <p>Capital improvement plans for road construction and maintenance are needed, especially on state forests and parks.</p>	<p><u>Condition DEM 2002.10</u></p> <p><u>Condition DEM/DFW 2002.13</u></p> <p><u>Condition DEM/DFW 2002.14</u></p>
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	<p>maintained.</p> <p>The Forest Cutting Act, Chapter 132, and the Wetlands Protection Act, Chapter 131, impose strict standards for the protection of wetland function and water quality. Compliance with and enforcement of both statutes appears to be excellent.</p> <p>There were no instances of harvest prescriptions intentionally reducing diversity or composition for the sake of efficient timber production.</p> <p>Silvicultural systems used by state agencies in Massachusetts do not routinely depend upon herbicides for control of regeneration in forest stands. All three agencies manage for natural regeneration.</p>		
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Principle 7: Management Plan	<p>MDC's completed plans for Quabbin and Wachusett fully meet the SCS criteria under Element A.6 and Principles 7 and 8 of the Interim Standard, except for planning at the ecoregion level.</p> <p>DFW site plans and Forest Management Guidelines for Wildlife Management Areas address many of the elements of a certifiable management plan; this agency is particularly strong in monitoring biodiversity aspects of forest management activities.</p> <p>DFW routinely employs intensive pre-harvest biodiversity monitoring, which in one case located a rare orchid that would probably not have been detected otherwise.</p>	<p>MDC's plans for the Ware River and Sudbury Watersheds remain in draft form; these must be completed in a timely fashion.</p> <p>Although DFW has excellent current forest cover type data, the WMAs have no comprehensive timber inventory information and thus cannot engage in any forest management planning involving future harvest volumes and revenues.</p> <p>In the team's judgment, DEM effectively has no management plans in place for lands where active timber sales have been conducted. This constitutes a fatal-flaw violation of FSC Principle 7 that prevents this agency from becoming certified until the associated Precondition is met.</p>	<p><u>Pre-conditions DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p>
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Principle 8: Monitoring & Assessment	<p>MDC maintains a forest inventory and forest cover type maps, which are being converted to a digital format. MDC also conducts routine assessments of selected wildlife species and periodic studies of species in need of protection.</p> <p>MDC measures CFI plots on a 10-year cycle in the Quabbin and Ware River watersheds, and has a comprehensive temporary plot inventory for the Wachusett.</p> <p>DFW has an excellent database of forest cover types, including surrounding lands. Biodiversity monitoring takes place before planned harvests and periodically after harvest on some management areas.</p> <p>DEM has excellent current information on their timber resource as a result of the recent remeasurement of 1400 CFI plots established in the 1960s, which has just recently been compiled.</p> <p>Foresters apparently have relatively up-to-date aerial photo and do prepare maps for individual timber sales while making silvicultural prescriptions.</p>	<p>Of the EOE 5 agencies, only DFW has attempted to develop stand yield predictions, and only for very broad strata that do not constitute biological “stands” on the ground.</p> <p>Spatial data, such as forest cover type maps, have not been developed for most of DEM’s State Forest system.</p> <p>Social impact monitoring is not systematically conducted.</p> <p>Both DEM and DFW lack some of the data that are desirable for landscape-level planning. DEM’s deficiency is most significant, because they are unable to display their compositional data in a way that allows them to develop spatially referenced site plans. DFW could do more efficient forest harvest management if they had better inventory data.</p>	<p><u>Pre-conditions DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p>
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<p>Principle 9: Maintenance of High Conservation Value Forest</p>	<p>In assessing their ownership for High Conservation Value Forest, DFW and MDC make effective use of a unique spatial database of 1830s forest lands to identify lands that have remained in forest for more than 170 years.</p> <p>DEM has contracted with a non-profit to locate, GIS map, and evaluate old-growth and other HCVF (e.g., municipal watersheds pitch-pine/scrub oak)</p> <p>DEM and DFW low rate of harvesting, in part, due to insufficient information on the resource is consistent with FSC' precautionary approach to managing areas with potential HCVF.</p> <p>MDC spent considerable funds to complete a study entitled "Rare and Exemplary Natural Communities at Quabbin" and also paid for two years of review of proposed harvesting lots by a team of professional botanists to look for rare plant populations.</p>	<p>The spatial database of 1830s forest lands that is being effectively used by DFW and MDC to identify potential High Conservation Value Forests, apparently has not been employed for similar purposes by DEM.</p> <p>DEM and DFW must designate and delineate HCVF areas and develop a plan for management of these areas.</p> <p>MDC plans have not specifically addressed High Conservation Value Forests, especially the contribution that MDC forests can make to regional conservation —see Section A6, this report).</p>	<p><u>Pre-conditions DEM 2002.1 (fulfilled April 04)</u></p> <p><u>Condition DEM/DFW 2002.1</u></p> <p><u>Condition DEM/DFW 2002.7</u></p> <p><u>Condition DEM/DFW 2002.8</u></p> <p><u>Condition DEM 2002.10</u></p>
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P10 – Plantations	Not applicable ²	Not applicable	

² In the FSC nomenclature, a *plantation* is a tree-dominated area in which the characteristics and functions of a natural forest are largely missing due to the intensity and breadth of human intervention. Under this definition, a *planted stand* is not necessarily a *plantation*. Due to the overall silvicultural regimes, particularly the length of rotations and the extent of green retentions during regeneration harvests, it is the evaluation team's determination that BP&L stand management does not constitute plantation forestry.

1.2 SCORING OF SCS CRITERIA AND FSC PRINCIPLES

Numerical ratings are the importance-weighted averages of three sets of evaluation criteria. For each of the three subject areas (i.e., program elements) of the analysis, the team employed a set of evaluation criteria, first assigning weights of relative importance for each criterion within a set and then assigning a performance score based upon field observations and information review. For each set of criteria (i.e., for each program element), the assigned scores were multiplied by their normalized weights of relative importance and then summed in order to generate three numerical index scores, one for each program element. Based upon information collected and team judgments formed, the EOEA agencies received the following overall numerical scores, on a scale of 0-100, with higher numbers representing superior performance. While 0 and 100 represent theoretical extremes, it is highly unlikely that any actual forestry operation would be scored at either extreme.

SCS used a *dual format* approach, which is duly endorsed by the FSC as a protocol for use in regions with no approved regional standard, to evaluate the Commonwealth of Massachusetts state forestlands. The scoring process is described in more detail in the *SCS Forest Conservation Program Operations Manual 2003*, which is available from www.scscertified.com. In the *dual format* approach the starting point is the SCS draft interim standard, which is based, in part, on the FSC Northeast Regional standard. This draft interim standard is made available for public comment and during the field evaluation notes are taken with full consideration of the interim standard. However, weighting of criteria and scoring is done with the SCS Forest Conservation Program evaluation criteria. In going through the scoring process, the SCS Team uses the SCS-to-FSC and FSC-to-SCS cross reference tables to ensure that all the FSC Principles are addressed. The scores for each of the FSC Principles are calculated as the un-weighted arithmetic average of the pertinent SCS evaluation criteria scores, again based upon the SCS-to-FSC cross-reference table. For certification to be warranted, the calculated scores for each of the ten FSC principles must exceed 80 points.

Table 1.2.1: SCS Program Element Scores

Program Element	MDC Score	DFW Score	DEM Score
Timber Resource Sustainability	93	87	82
Forest Ecosystem Maintenance	94	90	83
Socio-Economic Benefits	95	95	85

Table 1.2.2: FSC Principle Scores

	MDC	DFW	DEM
Principle 1	93	92	84
Principle 2	88	85	83
Principle 3	88	86	85
Principle 4	92	89	84
Principle 5	95	91	89
Principle 6	94	88	83
Principle 7	91	84	80
Principle 8	92	84	80
Principle 9	93	85	82

1.3 CERTIFICATION RECOMMENDATION AND JUSTIFICATION

As detailed throughout this report, and consistent with the accredited SCS Forest Conservation Program evaluation protocols, certification (with conditions) of the EOEa's DEM, DFW and MDC forestlands is recommended because the weighted average scores for the three program elements and the computed scores for the ten FSC Principles each are equal to or exceed 80 points, thereby complying with the numeric requirement for achieving certification. Originally for DEM deficiencies in management planning triggered a major failure for SCS criterion A.6 and FSC principle 7, pre-conditions are stipulated for the DEM. However, as of April 2004 the pre-conditions have been fulfilled and a score of 78 was assigned to Criterion A.6.

This report, prior to being finalized, was peer reviewed by three independent experts with credentials in pertinent natural resource disciplines:

- Charlie Thompson- Massachusetts Consulting Forester
- William Healy- Certified Wildlife Biologist
- Thom J. McEvoy, Assoc. Prof. & Extension Forester, University of Vermont.

As detailed in section 10.2 the evaluation team carefully considered the comments provided by the peer reviewers and made changes, as deemed appropriate, in response to those comments.

1.4. PROPOSED CONDITIONS TO BE ATTACHED TO AWARD OF CERTIFICATION

Pursuant to the SCS Forest Conservation Program protocols, the evaluation must specify one or more conditions for each SCS and FSC criterion that was assigned a score less than 80. The conditions are intended to rectify identified deficiencies, over a reasonable time frame. Pre-conditions are stipulated if a major failure is triggered or if an SCS Program Element Score or FSC Principle falls below 80 points.

Pre-condition DEM 2002.1 (Fulfilled April 2004): Prior to award of certification, DEM must complete the following stages of management planning:

1. Initiate a planning process³ that when completed will constitute landscape-level plans for all DEM properties across the state. In order to move this planning pre-condition to a condition DEM needs to:
 - a) Define the geographic areas or regions that will form the basis of landscape-level plans, ideally, this step would involve all agencies (not just DEM) who can then use this as a common ecological framework.
 - b) Commit to and provide a timeline to complete forest typing and mapping on all DEM forest- lands (we strongly recommend having this contracted, following the approach used by DFW).
 - c) Develop and implement a strategy to perform long-term resource allocation analysis and allowable cut calculations using an area-based model with yield curves derived from CFI data and other credible sources that account for the imbalanced age structure of the present forest and the evolving silvicultural systems being employed or contemplated.
 - d) Develop and implement a strategy to seek and incorporate credible public input in developing landscape-level and site-level plans.
2. Develop a management plan for one of the areas/regions defined in step 1 as well as a site plan for one of the forests (or other appropriate geographic unit) within that area/region. Development of these plans must include a credible public input process, and the end product must address all requirements under FSC Principle 7 and FSC criteria 4.4, 9.1, and 9.3.

April 2004 Update: Pre-condition parts 1 and 2 have been met and are now closed- see details under Criterion A.6. Condition 2002.1 is still open and requires completion of ecoregion and site plans.

Pre-Condition DEM 2002.2: Prior to award of certification, DEM must demonstrate it has addressed the leadership gap created by the recent vacancy of its Chief Forester. Ideally, a Chief Forester would be hired based on a national search and an aggressive effort to recruit candidates of high professional stature with demonstrated leadership talents.

April 2004 Update: Jim Dimaio Chief Forester was appointe, September 28, 2003

Condition DEM/DFW 2002.1: Within 5 years of award of certification, DEM and DFW must complete regional and site-level management plans for all properties. For

³ We recommend this be an ecoregional planning process, where ecoregions are defined that form the basis of the landscape-level plans.

properties acquired in the last 12 months and for future acquisitions, management plans must be developed within 2 years of the date of acquisition. For details and recommended guidance, see Pre-condition 2002.1 and Appendix A.

Condition DEM 2002.2: Within 1 year of award of certification, DEM must demonstrate staffing and funding required to complete the allowable harvest calculations using the planning methodology outlined in Pre-condition 2002.1. The allowable harvest calculation must be complete for all DEM properties within 3 years of award of certification.

Condition DFW 2002.3: Within 2 years of award of certification, DFW must complete a forest inventory (except for those properties acquired within the last 12 months).

Condition DEM/DFW 2002.4: Within 2 years of award of certification, DEM and DFW must complete an inventory of their respective road networks and then develop and implement a work plan⁴ for mitigating erosion and access problems. Because erosion problems often result from illegal access onto roads that are already closed, DEM and DFW should develop and implement a strategy to improve enforcement of existing road closures. Erosion and access problems that are classified as the highest priority should be scheduled for closure or rehabilitation within 3 months of being identified. In other words, DEM/DFW must not wait until the entire inventory is complete before dealing with major problem areas.

Condition DEM/DFW 2002.5: Within 3 years of award of certification, and as part of the management planning process, DEM and DFW must develop a long-term access plan for forest management and harvesting that includes maps of existing truck roads, plans and target dates for completion of roads to be built, schedule for road maintenance and road closures.

Condition DEM/DFW/MDC 2002.6: As new management plans are completed and existing plans are updated (see Pre-condition DEM 2002.1 and Condition DEM/DFW 2002.1), agencies must modify and augment their existing public summaries. One single master plan for each agency that includes site level details is sufficient to meet this condition. Public summaries must be done in accordance with requirements under FSC Principle 7 and criterion 8.2 and be readily available to the public, e.g., post on EOE web site.

Condition DEM/DFW 2002.7: Within 2 years of award of certification, DEM and DFW must designate and delineate HCVF⁵ areas and develop a plan for management of these areas.

⁴ Work plan – An acceptable work plan should include specific objectives and tasks, personnel responsible for carrying out tasks, and a timeline for accomplishing the plan.

⁵ Guidance on defining High Conservation Value Forests can be found in the document “Identifying High Conservation Values at a national level: a practical guide” available from www.proforest.com.

Condition DEM/DFW 2002.8: Within 3 years of award of certification, DEM and DFW must identify, designate, and map an ecological reserve system of representative forest communities and age classes, as well as ecologically unique areas including sensitive habitats for plants and animals.

Condition MDC 2002.9: Within 1 year of award of certification, MDC must determine what percentage of MDC lands falls under HCVF category 4 for watershed values and then prepare an amendment to management plans that formally designates HCVF areas and describes how management of these lands is consistent with maintaining or enhancing HCVF attributes.

Condition DEM 2002.10: Within 1 year of award of certification, DEM needs to implement a program to train staff to recognize rare and sensitive flora and fauna and habitat features (nest trees, vernal pools, etc.) and/or to diversify the Department's staff to respond to this need. Note: In addition to improved overall management of non-timber resources this condition is intended to foster an enhanced working relationship with the Natural Heritage and Endangered Species Program.

Condition DEM/DFW 2002.11:

Phase I

Within 6 months of award of respective certifications, develop and implement a work plan to address unmarked property boundaries. All boundaries must be marked on active timber sales prior to harvesting where other landowners abut the sale area.

Phase II

All boundaries that are not in legal dispute must be marked within 5 years of certification. Additionally DEM/DFW must begin the process of clarifying the legal status of those boundaries that are in dispute, and actions to resolve these disputes must be underway by the end of the 5-year period.

Condition EOEA - DEM/DFW 2002.12:

Within 1 year of award of certification, EOEA working with the appropriate Department, must develop and implement a work plan to identify and begin to resolve disputed ownership issues, especially where dispute and lack of authority leads to resource damage; e.g., land to the north of Little Widgeon Pond on Myles Standish State Forest.

Condition DEM/DFW 2002.13: Within 1 year of the respective award of certification, DEM and DFW must develop and implement work plans to manage unauthorized OHV use. (Consider \$5 annual vehicle fee to fund work). Note: SCS is aware that enforcement of illegal OHV use is under the jurisdiction of the Environmental Police, thus the work plan(s) should focus on improved cooperation with Environmental Police and or other control mechanisms that discourage illegal use.

Condition DFW/DEM/MDC 2002.14: Considering the immediate safety and productivity concerns of an aging fleet of vehicles, agencies must work with EOEA and OVM to upgrade vehicle fleet. Annual reports on the status of upgrading the fleet must be provided throughout the 5-year certification period.

Condition DEM/DFW/MDC 2002.15

Within 1 year of respective award of certification, agencies must work with EOEA to develop and implement a safety system that includes performance measures, record keeping of injury rates, and costs for personal injury and vehicle accidents of Commonwealth employees.

Condition DEM/DFW 2002.16: Within 1 year of the respective award of certification, DEM and DFW must implement a training program to recognize and protect historical and pre-historical archeological sites. Note: In addition to helping overall management of cultural resources this condition should improve cooperation with the Mass. Historical Commission.

Condition MDC/DEM/DFW 2002.17: Before selling roadside logs or other non-standing timber sales, as FSC certified, each agency must develop a written procedures document that describes how the operation will meet the FSC chain-of-custody requirements. This document must address FSC's six principles for chain-of-custody certification, and must be completed as well as reviewed and approved by SCS.

April 2004 Update: Since the time these conditions were first issued, substantial progress has been made- see Section 10.4 for details.

1.5. RECOMMENDATIONS

The individual recommendations are found throughout section 9.1. Recommendations identify means by which criteria or portions thereof, which exceed the minimum score for certification, may be improved, such that subsequent audits will award scores closer to 100.

1.6. CHAIN OF CUSTODY

At the request of EOEA, SCS conducted a joint forest management and chain-of-custody certification evaluation of the defined forest areas. With respect to DEM, DFW, and MDC, the chain-of-custody focus is on the "stump to roadside." However, the overwhelming majority of sales are sold as standing timber in a lump sum. In the very few occasions where logs are sold roadside the chain-of-custody begins with the severing of a standing tree to produce a merchantable log and ends with that log(s) leaving the custody of the respective agency at the roadside. During the fieldwork for the forest management evaluation, the evaluation team investigated the manner by which DEM, DFW, and MDC maintain chain-of-custody of the small amount of timber not sold as standing stumpage. As is detailed in Section 10.1 of this joint FM/COC certification

evaluation report, it is the conclusion of the SCS evaluation team that the chain-of-custody procedures meet the FSC Principles of Chain-of-Custody. Accordingly, award of CoC certification for the “stump to roadside” is warranted.

2.0 ADMINISTRATIVE CONTEXT

2.1 SUMMARY OF LEGISLATIVE, ADMINISTRATIVE AND LAND USE CONTEXT

As an entity engaged in public lands management in the Commonwealth of Massachusetts, EOE's management of the forestlands is subject to an array of local, state and federal guidelines and regulations. At the federal level, the principal regulations of greatest relevance to forest managers in the Commonwealth of Massachusetts include the following statutes:

- Endangered Species Act
- Clean Water Act
- Forest Resources Conservation and Shortage Relief Act
- National Resource Protection Act
- National Environmental Protection Act
- National Wild and Scenic River Act
- Occupational Safety and Health Act of 1970
- Archeological and Historic Preservation Act
- National Historic Preservation Act
- Native American Grave Protection and Repatriation Act
- Land and Water Conservation Fund Act of 1965
- Americans with Disabilities Act
- Rehabilitation Act
- Architectural Barriers Act
- U.S. ratified treaties, including CITES and ILO

At the state level, the principal regulations governing public lands forest management include the following:

- Areas of Critical Environmental Concern (301 CMR 12.00)
- Scenic and Recreational Rivers Orders (302 CMR 3.00)
- Ocean Sanctuaries (302 CMR 5.00)
- Major Capital Improvements Within the Mt. Greylock State Reservation (302 CMR 8.00)
- Dam Safety (302 CMR 10.00)
- Management Plans and Massachusetts Wildlands (304 CMR 7.00)
- Chapter 61, Forest Classification (304 CMR 8.00)
- Forester Licensing regulations (304 CMR 10.00)
- Forest Cutting Practices regulations (304 CMR 11.00)

- Forests and Parks Rules (304 CMR 12.00)
- Article 97 of the Constitution
- Wetlands Protection Act regulations (310 CMR 10.55)
- Ch 372 Acts of 1972 Kelly Wetmore Act and regulations

County and local regulations are part of the regulatory landscape and are relevant, but do not typically play a prominent role as compared to state and federal regulations. Notably, though, public forestlands in Massachusetts are subject to state wetland protection enforced by local Conservation Commissions (with review by the state DEP).

Massachusetts also has a set of forest practice regulations, the Forest Cutting Practices Act, Chapter 132, promulgated and administered by the DEM's Bureau of Forestry. These regulations address protection of wetlands and water quality; conservation of rare and endangered species; and use of appropriate silvicultural methods.

3.0 DESCRIPTION FOREST MANAGEMENT ENTERPRISE & ENVIRONMENTAL AND SOCIO-ECONOMIC CONTEXT

3.1 DESCRIPTION OF STATE FORESTLANDS

Forest Resources of Massachusetts (2000) reports that there are 3.1 million acres of forestland, approximately 60% of the land, in Massachusetts. The majority of this forestland, 76%, is in private ownership. Having originated after old-field abandonment, or clearcutting the first generation of old-field stands, most of the forests in the Commonwealth are even-aged in structure. Additionally, plantations of red and white pine are common on state lands. There are, however, some pockets of older forest that survived the era of land clearing for agriculture and natural disturbances in the past 150 years. Many of the already identified older forest types occur on DEM land, and are protected by agency policy.

3.2 SUMMARY OF THE DEFINED FOREST AREA THAT WAS ASSESSED

3.2.1 Total management areas and its main divisions

This assessment evaluated state lands managed by the principal agencies of the Executive Office of Environmental Affairs:

- Department of Environmental Management (DEM) – 285,000 acres, divided into hundreds of properties ranging in size from 1 acre to 16,000 acres.
- The Department of Fisheries and Wildlife (DFW) – 110,000 acres, divided into 110 Wilderness Management Areas ranging in size from less than 100 acres to 5,500 acre
- Metropolitan District Commission (MDC) – 45,000 acres divided into the Ware River watershed, and the Wachusett and Sudbury Reservoirs.

- Re-certification of the MDC Quabbin Reservoir -59,000 acres of forestland surrounding the Quabbin Reservoir

3.2.2 Forest Composition

Forest Resources of Massachusetts (2000) describes the forest vegetation types of Massachusetts as transitioning between the coniferous woodlands of the north and the mixed deciduous woodlands of the mid-Atlantic states. White pine, hemlock, oak, red maple, and hickory occur throughout the Commonwealth, while beech, birch, sugar and red maple are concentrated in the fertile soils of western Massachusetts. Pockets of red spruce and balsam fir are located on high elevations in the Berkshires. Pitch pine and scrub oak grow on the dry, sandy soils of Plymouth County, Cape Cod, and the islands. The oak type is the most prevalent association occurring on state forestland – it covers 28% of the state forest acreage. In order of importance, it is followed by northern hardwood (26%), white pine (17%), and hemlock (11%). The pitch pine/scrub oak and birch/maple types each account for 5% of the total acreage and spruce/fir and wooded wetlands account for 4% of the total acreage.

3.2.3 Socioeconomic Context

Forest Resources of Massachusetts (2000) reports that recreation is the dominant use of forestland in Massachusetts. As a result, tourism and services related to forest recreation create more employment than forestry activities. According to the Massachusetts Division of Employment and Training, resource extraction activities, including forestry, made up less than 1% of employment statewide for the year 2000. Even in the western parts of the state, which hold the majority of the states public and private forestlands, employment in resource extraction activities hovers around the 1% mark. There are 89 sawmills in Massachusetts, which are concentrated in Worcester, Franklin, Hampshire, Hampden, and Berkshire counties.

According to the US Fish and Wildlife Service, fishing and hunting activities and wildlife-watching activities were estimated to contribute \$630 million and \$595 million, respectively, to the Massachusetts economy in 1997. The Massachusetts Office of Travel and Tourism estimated that in 1997 non-residents of Massachusetts contributed \$10 billion to the state's economy for activities related to forests and the outdoors. Wood products from Massachusetts are estimated to generate \$580-\$845 million annually.

3.3 SUMMARY OF THE FOREST MANAGEMENT SYSTEM

3.3.1 Management Objectives

DEM

The DEM's management is guided by the mission of the Bureau of Forestry, which exists to protect the public's interest in the private and public lands of Massachusetts. These public interests include: water conservation, flood and soil loss prevention, wildlife

habitat, recreation, protection of water and air quality, and a continued and increasing supply of forest products.

DFW

The DFW's management is guided by their statutory responsibility for the conservation of Massachusetts's flora and fauna, which may be measured by success in the conservation of biodiversity. Other cultural products, such as timber production, can be accommodated on Wildlife Management Areas, but not without constraint.

MDC

The MDC's management is guided by the mandate to the Division of Watershed Management to "...utilize and conserve...water and other natural resources in order to protect, preserve and enhance the environment of the Commonwealth and to assure availability of pure water for future generations." DWM is directed to prepare watershed management plans that provide for forestry, water yield enhancement, and recreational activities.

3.3.2 Silvicultural and/or Other Management Systems

In general, these agencies' silvicultural systems emphasize contemporary variants of traditional single-aged methods. Group shelterwood with reserves and group selection systems are used innovatively to convert the present uniform, mature stands to more spatially diverse, irregular structures. Natural regeneration, which is usually dependable and abundant, is used exclusively; currently no planting or direct seeding is done except on MDC property, where a limited amount (ranging from 20,000 to 100,000 seedlings) of enrichment planting is conducted annually. For more detailed information see sections A.1 and A.2.

3.4 SUMMARY OF ESTIMATES OF MAXIMUM SUSTAINABLE YIELD FOR COMMERCIAL PRODUCTS

See sections 9.A.1 and 9.A.2.

3.4.1 Underlying Assumptions

See sections 9.A.1 and 9.A.2.

3.5 QUANTITATIVE SUMMARY OF CURRENT AND PROJECTED PRODUCTION, INCLUDING RATE OF ANNUAL HARVEST

See sections 9.A.1 and 9.A.2.

4.0 OTHER ACTIVITIES

4.1 SUMMARY OF OTHER ACTIVITIES BEING UNDERTAKEN WITHIN THE DEFINED

FOREST AREA

Aside from commercial timber harvesting within the defined forest area, the other principal land uses and management activities include:

- Outdoor recreation, such as hunting, fishing, boating, swimming, mountain biking, horseback riding, hiking, camping, and wildlife viewing. Quabbin Park alone receives 600,000 visitors per year, and DEM properties receive over 14 million visits annually.
- Collection of non-timber forest products.
- Firewood cutting.
- Traditional/cultural activities by Native Americans, such as ceremonial sites and collection of certain herbs and grasses
- Areas of cultural and historical significance, such as early American settlements.
- Research on various natural resource management issues.
- Production of high-quality drinking water.

4.2 EVALUATION OF THE IMPACT, OR POTENTIAL IMPACT, OF SUCH ACTIVITIES

The greatest potential negative impact of the other activities on the lands managed by DEM, DFW, and MDC relate to active recreational use (sanctioned and unsanctioned). Recreational users have the potential to negative impact road, trail, and water quality. Agencies are generally aware of this potential and often take measures to minimize or mitigate negative impacts.

OHV use is perhaps one of the most rapidly growing concerns for forest managers in the region. Concerns include soil erosion, particularly near streams and lakeshores. See section C.3 for more detail regarding negative impacts of OHV.

5.0 BACKGROUND TO THE EVALUATION

5.1 EVALUATION TEAM

The SCS evaluation team for the State of Massachusetts forestlands assessment included:

Robert Seymour, Timber Resource Sustainability (Team Leader)

David Capen, Ecosystem Maintenance Review

Jim Furnish, Social Review and Financial Specialist

Dave Wager, Team coordination - Ecosystem Maintenance & Social Review

The members of the team have prior experience in certification evaluations within the FSC framework.

Robert Seymour

Biographical Sketch: Dr. Seymour is the Curtis Hutchins Professor of Silviculture, in the Department of Forest Ecosystem Science at the University of Maine, where he teaches courses in silviculture, the spruce-fir industrial ecosystem, and forest stand dynamics. His research interests include production silvicultural practices, forest canopy structure, and ecologically based silvicultural systems. He has 23 years of experience in research and management of forests in the Acadian region of northeastern North America, and has authored or coauthored over 40 refereed publications and four book chapters. Prior to assuming the Hutchins Professorship in 1987, he worked as the timber management program leader for the Cooperative Forestry Research Unit from 1981-1987. In 1995, along with Mac Hunter, he was named a Conservation Scholar by the Pew Foundation and was awarded a three-year grant to study and write about managing forest biodiversity in the Northeast. He has served on FSC certification evaluation teams for seven landowners in North America totally over 6 million acres. He holds a B. S. in forestry from Ohio State University, and a Master of Forestry and Ph. D. from the Yale School of Forestry and Environmental Studies.

Dr. David E. Capen

Biographical Sketch: David E. Capen is a Research Professor of Natural Resources at the University of Vermont. He is an avian ecologist with primary interests in wildlife habitat studies, especially landscape-level approaches to habitat analysis. Biodiversity analysis and design of conservation networks are other areas of specialty. He has degrees in Forestry from the University of Tennessee, Wildlife Management from the University of Maine, and Wildlife Science from Utah State University, and has been on the faculty at UVM for 26 years. In 1992-93, on a sabbatical leave, Dr. Capen returned to Utah State University to study remote sensing. More recently, on a sabbatical in 1999-00, he was in New South Wales, Australia, studying methods of efficient reserve design. He is the Director of UVM's Spatial Analysis Laboratory and the principal investigator for many of the research projects being conducted through the laboratory. He is a Certified Wildlife Biologist. He has served on two audit teams for SFI forest certification. Dr. Capen has quickly gained a solid background in FSC certification after serving as a peer reviewer for the State of Maine and Yale University FSC evaluations.

James R. Furnish

Biographical Sketch:

Between 1999-2002 Mr. Furnish was the Deputy Chief of the national forest system where he held the responsibility for the 192 million acre national forest system and the implementation of national-level policies. Under his direct supervision and guidance, the roadless area protection guidelines and new forest planning regulations were completed after many years of preparation and research. Prior to his post as Deputy Chief, Mr. Furnish has had a distinguished career as a natural resource management professional in the public sector holding positions such as Forest Supervisor of the Siuslaw National Forest in Oregon where he was responsible for regional-level planning and administration and where he managed controversial issues, for example, the spotted owl and salmon crises during his tenure (1991-1999); Appeal Coordinator for the Forest Service National

Headquarters in Washington, D.C. handling disputes between various parties affected by Forest Service policy (1989-1991); and Staff Officer in the San Juan National Forest in Colorado where he undertook planning, public affairs, and resource information management (1984-1989). Having served at all levels of forest management Mr. Furnish has a wealth of knowledge and a deep multi-faceted understanding of forestry issues. He holds a B.S. in Forest Management from Iowa State University.

Dave Wager, M.S.

Biographical Sketch:

Mr. Wager has served as the Director of Forest Management Certification since September 2000 and is fully conversant in FSC Certification procedures and practices. Mr. Wager has expertise in business and forest ecology (B.S. business, Skidmore College; M.S. Forest Resources, Utah State University) and utilizes both in his position with SCS. He oversees the day-to-day operations of SCS' Forest Management Certification and conducts Forest Management and Chain-of-Custody evaluations throughout the world. Mr. Wager recently led forest management certification evaluations of several Indian reservations in the Northern Rocky Mountains, Potlatch's Hybrid Poplar Plantation in Oregon, and Perak Integrated Timber Complex in Malaysia. As Director, Mr. Wager oversees first-time certification evaluations, annual audits, and contract renewal certifications on approximately 50 active clients. These active clients include numerous large industrial forest management operations (e.g., Collins Pine Company, Fletcher Challenge Forests, Stora Enso Forest), large public land operations (e.g., Pennsylvania, Maine, Washington state forests), as well as numerous small landowners.

5.2 SUMMARY OF PREVIOUS CERTIFICATION EVALUATIONS

There have been no prior certification evaluations conducted on DEM or DFW forestlands. MDC lands surrounding the Quabbin Reservoir were certified under the FSC, since 1997. These lands were originally certified by SmartWood, but starting in September of 2002, SCS assumed responsibility for this certificate. All of SmartWood's FSC assessment reports of the MDC Quabbin certificate were reviewed and considered in this evaluation, though there were no outstanding conditions under the SmartWood certificate.

6.0 STANDARDS

6.1 FOREST STEWARDSHIP STANDARD USED

The SCS Draft Interim Standard for State Forestlands in Massachusetts was developed by modifying the SCS' Generic Interim Standard to reflect management of state public forests in the Northeast and then incorporating relevant components of the Northeast Draft Regional Standard. More than 6 weeks prior to the start of the field evaluation, the Draft Interim Standard was sent out for comment to all members of FSC's Northeast Regional Working Group and to other stakeholders (listed in section 8.0).

In addition, SCS has developed the SCS Forest Conservation Program (FCP) criteria. These 18 FCP criteria aggregated into three *program elements* are expressly designed to fully map the interim standard, which is formatted to the FSC Principles and Criteria. These 18 criteria are scored by the evaluation team in a manner that incorporates notes from the interim standard. The scores of these 18 criteria are then mathematically translated into scores for each of the 10 FSC Principles.

The Forest Conservation Program evaluation criteria, organized into three program elements, are:

Element A: Timber Resource Sustainability	A1: Harvest Regulation
	A2: Growth and Stocking Control
	A3: Pest and Pathogen Management
	A4: Forest Access
	A5: Harvest Efficiency and Product Utilization
	A6: Management Planning and Information Base
Element B: Forest Ecosystem Maintenance	B1: Forest Community Structure and Composition
	B2: Long-term Ecological Productivity and Health
	B3: Wildlife Management Actions, Strategies and Programs
	B4: Watercourse Management Policies and Programs
	B5: Pesticide Use, Practices and Policies
	B6: Ecosystem Reserves
Element C: Financial and Socio-Economic Considerations	C1: Financial Stability
	C2: Community and Public Involvement
	C3: Public Use Management
	C4: Investment: Capital and Personnel
	C5: Employee and Contractor Relations
	C6: Legal and Regulatory Compliance

As is detailed in the Operations Manual and the evaluation criteria document, both publicly available from SCS, the evaluation criteria each are comprised of a written description of scope and focus as well as a set of *scoring guidelines* that are designed to assist the evaluation team in assigning scores on a 100-point scale.

6.2 COMMENTS OF STAKEHOLDERS ON THE DRAFT INTERIM STANDARD

Written comments regarding the draft interim standard were received from only one individual/organization, these comments focused on issues, such as:

- landscape-level planning
- protection of watercourses
- old growth
- negative impacts from logging
- chemical pesticides
- employee and contractor wages
- ecosystem reserves and high conservation value forests

After consideration of the comments that were received, the draft interim standard was modified into the Interim Standard for State Forestlands in Massachusetts shortly before the start of the field evaluation.

6.3 COPY OF THE STANDARD

The Interim Standard for State Forestlands in Massachusetts is available upon request from the SCS offices in Emeryville, California.

7.0 SITES EVALUATED

The field evaluation commenced on August 19 and concluded on August 30, 2002. A representative sample of field sites was selected by the SCS team before the start of the field evaluation, based on a randomly drawn sample of the past harvest operations. The intent was to observe a full cross-section of field circumstances and to sample forests in all regions/districts in which DEM, DFW, MDC manage land. In all, 70 field sites were visited by the team during the tour of the Massachusetts' forestlands, some of which required a couple hours to assess the diversity of conditions present. In total, approximately 100 individuals within the DEM, DFW, MDC as well as outside stakeholders were consulted, face-to-face or by telephone, by the evaluation team during the 2-week period.

7.1 ITINERARY OF FIELD EVALUATION

Office Review

As part of the evaluation, the SCS evaluation team also conducted a review of DEM and MDC's administrative procedures and activities. This was accomplished through site visits to the regional offices. In addition to staff interviews, during the office visits a review was conducted of a random sample of documentation related to timber harvest and public use management activities.

Field Review

Scheduled on-site visits to EOEA (DEM, MDC, DFW) forest operations were as follows:

Monday, August 19

A.M.**Rocky Gutter WMA (Tom O'Shea, Austin Mason)**

- Irregular shaped group selection openings
- Vernal pool protection
- Snag retention, and discussion of OSHA vs. wildlife
- Hurricane windthrow
- Pine regeneration
- Structural diversity
- Forest boundary marking
- Site plan that recognized Rocky Gutter as BioMap Core area
- Sales contract, Forest Cutting Plan for Chapter 132
- Mapped filter strips along wetlands
- GIS maps that show stands, forest types, and timber harvest areas
- Effects of high deer population
- Huckleberry regeneration
- White pine as "climax"

P.M.**Myles Standish State Forest (Bill Rivers, Austin Mason, Don Matinzi (Assistant Regional Director,))**

- Regional Headquarters
- Headquarters pine site – pine shelterwood in high recreation use area (bike trail through stand)
- Frost pockets – efforts to maintain
- Prescribed burning; cooperative project with TNC; difficult to get a hot burn in spring; burn permits required from local town fire officials
- Discussed surveys of lepidoptera and tiger beetles
- Traveled fire roads, viewed road conditions that encouraged run-off onto the road surface
- Discussed boundary issues and intrusion of ORVs on adjacent properties owned by DEM, DFW, and the Town of Plymouth

Massasoit State Forest

- Pine shelterwood – marked by consulting forester
- Lakeside buffer zone
- Discussion of DEM contracts to consultants

Tuesday, August 20**A.M.****Sudbury Reservoir Watershed (Greg Buzzell, Peter Church)**

- Group selection, illustrating MDC objective for creating different age classes in a forest that is largely a single age-class

- 68-acre compartment, with 17 acres being harvested in patches ranging from 0.2 a to 4.5a
- Coarse woody debris retention
- Bay Circuit Trail interface

Harold Parker State Forest (Darrell Keay, Harris Penniman)

- Reviewed management forester work plan for this region
- Logging in urban interface
- Cord wood sale
- Property boundaries
- Chap. 132 plan for 22-ac harvest with no BMP or Heritage issues
- Chap. 132 plan for 15-acre white pine stand; wildlife considerations

Aug. 20 P.M.**Harry Rich State Forest, Groton**

- Hardwood competition
- Red pine plantation
- Pre-designated skid trails
- Chap 132 cutting plan for 25 acres of white pine plantation; no BMP or wildlife issues
- Two other similar plans for small acreage pine harvesting

Townsend State Forest

- Overstory removal
- Hemlock stands without adelgid
- A 25-acre stand-improvement cut, featuring overstory in one part of stand, understory in another.
- Fuelwood sale.

Wednesday, August 21**A.M.**

- **High Ridge Wildlife Management Area** (Tom O'Shea, John Scanlon) Stream crossings and wetland buffers; experimental planting of native sedges on logging roads and stream crossing
- Mast production experiment
- Historical archeological sites
- Group selection harvests
- Reviewed site plan, discussed 1830's Primary Forest Map
- Reviewed vernal pools on this area, both certified and non-certified (but all treated the same)
- Abundant coarse woody debris, retention trees and snags.

P.M.

DEM Leominster State Forest (Chuck Perna, Mike Barry)

- Site marked to be harvested; thinning of high quality white pine and red
- Inoperable slopes
- Recommended 2-5 wildlife trees left/acre

Mt. Wachusett Ski Area and Mt. Wachusett State Reservation

- Proposed clearing for snowboard park
- Maverick ski trail
- Old growth protection

MDC Offices in West Boyston (Brian Keenan, Greg Buzzell)

- GIS use and harvest scheduling program
- Reviewed maps

MDC Wachusett Reservoir

- Group selections/shelterwood;
- Swamp white oak reserve (an unofficial reserve)
- Highway corridor – daylighted
- Discussion of funding for building roads on MDC lands;
- 300 acres of salvage after the blowdown associated with a microburst in 1989

Thursday, August 22**A.M.****Otter River State Forest** (Chuck Perna, Mike Barry, Rich Valcourt, Service Forester)

- Commercial thinning of red and white pine plantation
- Small patch cut to encourage stand diversity.
- 50 acres cut at different times, including 10 acres of hardwoods.
- Reviewed /discussed diversity of species and age classes.
- Regeneration of poplar clones, but with less than desirable success.
- Road conditions
- Patch of older hemlock trees

Hubbardston State Forest

- 1995 harvest of 37-ac stand.
- Mixed pine/hardwood with good stand diversity.

Winimusset WMA.

- Reviewed monitoring of birds, butterflies and vegetation initiated in 1999.
- Viewed restoration of early-successional habitat and OSR harvest of adjacent stand.
- Stream and wetland crossing
- Closing of roads and landing

P.M.**Ware River** (Bruce Spencer, Herm Eck)

- 5-acre patch cut, very clean of standing trees; reviewed oak regeneration
- Discussed MDC's review of harvest plans for wildlife and Heritage issues
- Larch shelterwood; 3 small stands;
- Hardwood regeneration encouraged; 3 small stream crossing with culverts.
- Ongoing harvest – residual stand damage, marking of leave trees

Meeting with Environmental NGO's**Public Meeting at Mount Wachusett Community College**

See Table 8.4.1 for comment received at these meetings as well as comments from other stakeholders.

Friday, August 23**A.M.****Quabbin lots in Hardwick, Petersham** (Steve Ward, Bruce, Thom)

- Structural diversity efforts; results of active deer management
- Three cohort pine stand
- Red pine plantation – retention
- Logger interview (Tom King)
- Experiments with plantings (i.e., around vernal pools) and ways of stemming the spread of exotics.
- Problems with beavers.

P.M.**Petersham State Forest** (Tom Lavoy, Regional Director; Dave Richard, Chuck Perna, Mike Barry)

- CFI Plot
- Illegal vehicle use issues
- Riceville Dam harvest, winter 2002; several small openings for aspen; good retention of trees for wildlife

DEM Riceville Lot

- Hemlock shelterwood prep cut
- Cavity tree retention

MDC Blackington Road

- Group selection cuts
- Structural diversity

Wendell State Forest (Dave Richard)

- Oversized landings for wildlife habitat
- Harvest operations in wetland area
- Regeneration issues
- Small skidder operations and utilization
- Snag retention

- Residual damage

Saturday, August 24**A.M.****Herm Covey WMA**

- Shelterwood
- Sensitive species concern (woodland turtle); resolved by cutting only in winter
- Shift pure white pine stand to mixed species stand to increase diversity on the site
- Wetland buffer and vernal pools

MDC Quabbin Overlook

- Deer browse
- Visual aesthetics in high use area

MDC-Gate 8.

- Hemlock stand infected with adelgid
- CFI plot

Monday, August 26**Stakeholder Consultation****DEM Regional Office, Pittsfield – Office Review**

- Computer systems
- Access database for tracking timber sales
- Map archives

Field Visits, August 26**A.M.****Fox Den WMA (John Scanlon)**

- Visited harvest sites with objective to return vegetation to early successional stages, while retaining groups of mature hardwood trees, aggregate retention cutting
- Further objective was to encourage regeneration of black cherry
- Steep slopes; road and bridge construction
- Reviewed safety issues with bridge timbers at stream crossing.
- Filter strips left along streams.

Peru WMA (John Scanlon)

- Trees marked for cutting to release old apple orchard.
- Round-leaved orchids found on site in preliminary community survey before harvest. Harvesting being delayed until recommendations can be made by Heritage Program.

P.M.**Middlefield State Forest** (Kris Massini) 90-acre sugar maple stand marked for thinning.

- Ample attention paid to wildlife trees; many marked with “W”
- All basswood, white pine, and spruce to be left for diversity
- Discussion of leaving groups of legacy trees
- Discovery of round-leaved orchid in the stand during field visit
- Care in marking skid road and locating stream crossing
- Attention to safety regulations (seat belt, hard hats)
- Also, a 16-acre stand marked to heavy overstory removal to create a two-cohort stand and release oak and cherry regeneration.
- Protection of a former house site with buffer.

Tuesday, August 27**A.M.****October Mountain****Roaring Brook Sale** (Kris Massini), Adaptive management

- Black cherry re-generation
- Shelterwood cuts for black cherry
- Girdling of competing beech
- Access control problems– gate broken
- Haul road safety issues

5-acre vista – vegetation removal treatment

- Foliar spray of glyphosate

Norway Spruce Plantation

- Pest and pathogen issues
- Black cherry re-generation
- Norway and red spruce harvesting
- Active logging operation, interviewed Scott Chaffee

P.M.**Beartown State Forest** (Conrad Ohman, Jeff Martin)

- Skid trails and ATV trails – erosion control through timber sale
- Oak retention
- Designated ATV site
- Grass seeding, and other good examples of BMPs

Dinner Meeting Consulting Foresters

See Table 8.4.1 for comment received at these meetings as well as comments from other stakeholders.

Wednesday, August 28

A.M.

Savoy Mountain State Forest (Dave Robb, Joanne Nunes, Nick Anzuoni)

- Hardwood stand marked, with 7-acre reserve area on steep slope
- Road and ATV trail erosion problems
- Group selections
- Natural Heritage site; a rare sedge found on revegetated logging road
- Beech clearcut
- Norway spruce plantation. First cut in 1990, but root disease has killed much of the remaining trees.
- Discussion with Bill Rivers about Resource Management Planning by DEM management foresters

Hawley State Forest (Joanne Nunes, Nick Anzuoni)

- Portable bridge replacement
- Reserve area
- Unauthorized mountain bike trail
- Stand marked by U-Mass students
- Planning harvesting through CFI reconnoiter
- Discussed planning/productivity

7.2 JUSTIFICATION FOR SELECTION OF ITEMS AND PLACES INSPECTED

The design of the field phase of the evaluation was to acquire first-hand exposure to the full spectrum of management situations and programmatic activities found throughout the defined forest areas. Accordingly, the team visited most regions comprising the defined forest areas and made field stops in harvest areas within each region. Substantial time was spent individually with nearly all the DEM, DFW, and MDC forestry field staff during the course of inspecting these sites.

The evaluation team was satisfied that the scheduled on-site field inspections of the forest operations were sufficient in scope and intensity to provide an adequate factual and observational basis for reaching a certification decision regarding the candidacy of these forestlands. The team spent field time in all of the main physiographic regions in which the DEM, DFW, and MDC forestlands are located and observed conditions throughout the various forest types of the defined forest area.

8.0 STAKEHOLDER CONSULTATION

8.1 IDENTIFICATION OF STAKEHOLDERS INFLUENCED BY THE ENTERPRISE

It was the judgment of the evaluation team that the principal stakeholder groups of relevance to the evaluation included:

- EOEA (DEM, DFW, MDC) employees, including headquarters and field
- EOEA (DEM, DFW, MDC) contractors
- Local community groups (such as board of selectmen, conservation commissions)
- Municipal authorities
- Tribal members and representatives
- Abutting land owners
- Local and regionally-based environmental organizations and locally-based conservationists
- Forest industry groups and organizations
- State and Federal regulatory agency personnel
- User groups, such as mountain bike clubs
- Regional FSC working group

The evaluation team solicited input from and/or interviewed individuals and organizations within each of these stakeholder groups. The complete list of stakeholders contacted is kept in the SCS offices, in total approximately 170 stakeholders from a cross-section of interests were contacted, and over 60 individuals/groups offered comments. Comments that were received came via meetings and personal interviews, phone interviews, and through written responses.

8.2-8.3 SUMMARY OF LEGAL AND CUSTOMARY USE-RIGHTS

As public land, the general public has legal access, within the constraints of state and local laws, to the defined forest area, for general recreation and non-commercial activities, though access to MDC lands is heavily restricted to protect water.

Native Americans indigenous to the region have historically used the defined forest area for cultural and subsistence activities.

8.4 INFORMATION OBTAINED AND CONCLUSIONS DRAWN

See Section 9, specifically 9.1(C), for a detailed discussion of the information that was gathered from numerous sources, including but not limited to stakeholders, by the evaluation team and the conclusions that were reached.

Table 8.4.1 shows a summary of the major perspectives and concerns expressed by the stakeholders as well as responses and perspectives from the evaluation team where applicable.

TABLE 8.4.1 – Summary of Stakeholder Major Perspectives and Concerns

Environmental groups

Comment/Concern	SCS Response or Perspective
DEM has often had a confrontational relationship with NHESP, and that the two agencies should work much more cooperatively.	Condition DEM 2002.10
DEM staff should be more attentive to landscape level management concerns.	Pre-Condition DEM 2002.1
Commercial timber harvests on public lands – some groups believe no harvesting should be done on public lands; others agree there is room to increase the current level of harvest.	Condition DEM 2002.2
There are not enough roadless areas with non-motorized access.	DEM/DFW 2002.5 DEM/DFW 2002.7 Note: DFW already has a policy restricting motorized access.
EOEA agencies need to be role models at complying with Mass. Endangered Species Act. DEM is insufficient in their level of interaction, either through direct employment or consultation, with ecological and biological expertise.	Team felt DFW and MDC are role models Condition DEM 2002.10 will improve DEM's performance
DEM Chief Forester position should be filled in a timely manner. Candidate should be committed to implementing DEM's mandate for providing the highest quality protection and management of natural and cultural resources.	Pre-condition DEM 2002.2
DEM needs to be more active in removing invasive species	Pre-conditions and condition regarding planning should address this. Note: while this stakeholders comments was focused on DEM, the team observed that all three agencies could improve.
DEM needs to be more active in prescribed burning in fire-dependent habitats	Pre-conditions and condition regarding planning should address this.
DEM regulates itself for compliance with State Forestry Regulations, this self policing is ineffective	The evaluation team did not find violations of State Forestry Regulations on DEM lands.
Illegal off-road vehicle use and illegal dumping are serious problems on public forests in MA. DEM/DFW are ineffective at responding to illegal off-road-vehicle	Condition DEM/DFW 2002.13

problems	
EOEA agencies could improve identification and protection of cultural sites. Proper inventory and management plans are needed to improve protection	Condition DEM/DFW 2002.16
Public forest management needs to be carried out in a manner that offsets intensive management or land clearing on private lands.	The Team believes forest management conducted by the state to be at an intensity that offsets land clearing and industrial forest management. Also, pre-conditions and condition regarding planning should address this.
DEM lands are important for protection of remaining old growth and older mature classes	Pre-conditions and conditions regarding planning, HCVF, and ecological reserves should address this.
Chemical pesticides in Mass forests are unnecessary	See section B.5
Use of exotic species should be forbidden from MA forests	With the possible exception of Norway spruce to replace hemlock, exotics are not used nor being considered for use.
Level of biological inventory for DEM lands is inadequate to form the basis of good management plans	Pre-Condition DEM 2002.1 Conditions: DEM/DFW 2002.2 DEM/DFW 2002.7 DEM/DFW 2002.8
With respect to management planning there is an urgent need for DEM to focus on acquiring necessary inventory and soliciting public input. Harvesting operation should be low priority until management planning is completed Timber harvesting should only occur in locations where comprehensive management plans have been developed with public input	Pre-Condition DEM 2002.1 Conditions: DEM/DFW 2002.1 DEM/DFW 2002.2 DEM/DFW 2002.7 DEM/DFW 2002.8

Currently there is little legal protection of old growth on DEM lands in the state DEM should set up a process to formally designate old growth as protected Taken DEM too long to verify and confirm old growth on Wachusett	DEM/DFW 2002.7 DEM/DFW 2002.8
There is a lack of landscape-level planning on DEM lands; there needs to be a statewide plan No effort to integrate with Bio-reserve project	Pre-Condition DEM 2002.1 Conditions: DEM/DFW 2002.2
Myles Standish – pitch pine/oak type is HCVF and DEM not maintaining it	DEM/DFW 2002.7 DEM/DFW 2002.8
Unable to get information from DEM on where they have been harvesting	DEM/DFW/MDC 2002.6
Failure to pay PILOT and therefore resentment to continued acquisition PILOT payments – in one town were 20% of what they should be. Concerned about lack of economic benefit for local towns, which are not getting any benefits in lieu of taxes because of the lack of harvesting. Recreation on lands increases burden on town – e.g., search and rescue	See section C.1. for detailed discussion:

Community groups, beneficiaries, consulting foresters:

Comment/Concern	Response
Pleased to see 3 rd party certification on state lands and endorses MDC but fears DEM and perhaps DFW not worthy of FSC Concern about evaluating State of Mass as a whole, instead of as separate agencies	One of the EOE's objectives for this unified certification review is to find ways to improve interagency cooperation.

DEM is failing at their mandate to produce timber revenue for tax payers	Pre-conditions and conditions regarding planning, specifically public consultation on what tax payers want with their forests to look like will improve this situation.
New leadership is needed at DEM	Pre-condition DEM 2002.2
DEM's measurements of what is growing are underestimated DEM is not cutting anywhere near what is growing and generally DEM is not managing to its potential	Condition DEM 2002.2
The fact that large percentages of DEM land are not managed, nor designated as reserve, is incompatible with sustainable forestry. Unmanaged forests are not worthy of FSC certification	Pre-conditions and conditions regarding planning, HC VF, and ecological reserves should address this.
DEM boundary marking is inadequate in coverage and often incorrect	Condition DEM/DFW 2002.11
Instead of selecting areas to operate based on science and a landscape perspective of the resource, DEM chooses to operate in uncontroversial areas. DEM overall management objectives need to be clearly defined Would like to see master state plan and plans for specific forests at local level.	Pre-condition DEM 2002.1 Condition DEM/DFW 2002.1
Forestry students and consultants are not knowledgeable enough to effectively mark timber.	DEM acknowledges this and has improved supervision.
DEM's compensation to consulting foresters for marking is too low. Increasing compensation to a reasonable level would solve the consultant shortage problem. Also, funding for consulting forester contract work is often authorized too late in the fiscal year to take full advantage of it. Consulting foresters could be used to collect inventory to alleviate bottlenecks in getting sales completed	
Concern that during the state's recession funding for consulting foresters would be eliminated, perhaps out of ignorance. The state should not cut funding for consulting foresters because this program actually brings in revenue.	
DEM is chronically understaffed	See table 9.A.3 which compares DEM with other agencies.

Lack of markets for low quality timber make it extremely difficult to carry out silviculture on DEM lands	
DEM needs to either divide into separate park and forestry units or have a leader that understands forestry in addition to parks and recreation	
DEM has no people trained in roads	

9.0 FINDINGS

The findings and observations of the evaluation team are presented in this section, grouped into three *program elements*: timber resource sustainability, ecosystem maintenance, and socio-economic considerations. The reader is referred to the SCS *Interim Standard for State Forestlands in New England* and the *SCS Forest Conservation Program Operations Manual* (both available upon request from SCS) for a detailed discussion of the SCS and FSC evaluation criteria.

9.1(A). OBSERVATIONS AND CONCLUSIONS REGARDING PROGRAM ELEMENT A: TIMBER RESOURCE SUSTAINABILITY

Program Element A is concerned with the manner in which the timber inventories of an ownership are managed for continuous production over the long run and in a manner that derives optimal yields by establishing and maintaining well-stocked and vigorous stands, managed under either even-aged or uneven-aged silvicultural systems. The team focuses on both stand-level and forest management unit-level aspects of sustainable forest management. FMU-level concerns deal with regulating the growing stock, over time, and the development and updating of management plans. Attention is also paid to important ancillary topics, such as design, layout and maintenance of the road network as well as actions taken by forest managers to anticipate and respond to pest and pathogen outbreaks.

A.1 Timber Harvest Regulation

Background

The landowner's harvest regulation strategy is arguably the most important criterion assessed in a certification evaluation, because it governs the timber sustainability for the enterprise. To score highly, the landowner must have a rigorously formulated, long-term (at least one rotation) plan to harvest at levels that create and maintain balanced and sustainable forest structures over time. Assumptions about stand yields and other

important assumptions must be well supported, methodology must reflect the natural forest dynamics, and the chosen strategy must be robust against factors that could prevent its achievement. Finally, and very importantly, the strategy must be followed in practice, with annual tracking mechanisms in place to identify and correct over-harvests.

MDC

Nearly 10 years ago, MDC adopted an innovative approach to regulating their forest structure based on risk to catastrophic losses (principally from major hurricanes like 1938), that would negatively impact water quality. Based on a landscape-scale blowdown susceptibility rating developed by the Harvard Forest, the long-term goal is to have no more than one third of the forest over 60 years old (i.e., in the high-risk height class), and to capitalize on the water quality benefits from regeneration (the “reserve forest”), mid-age forest (aggressive nutrient assimilation), as well as older forest (seed source, thermal regulator, deep root structure), by balancing three general age classes (0-30 yrs, 30-60 yrs, >60 yrs) throughout the forest. The plan is not to regenerate the >60 age class (at age 90, for example) but rather, to allow it to develop into a managed old-growth-like structure through single-tree selection cuttings. The plan is to create this structure as a fine-scale mosaic in patches typically under one acre. Silvicultural systems aim to regenerate about one-third of each stand treated, using group selection or group shelterwood regeneration treatments applied on a 30-year cutting cycle. Area regenerated annually is thus about 1% of the regulated forest area; total area treated is three times this amount. Applying this simple area-regulation approach to the net area of operable timberland in each watershed results in the values shown in Table 9.A.1

DFW

DFW recently prepared *Forest Management Guidelines for WMAs* (Draft, 2000), which outlines a forest structure goal of 5% seedling/early seral, 10% sapling, 35% each in pole and sawtimber, and 10% late seral (over age 150). The current structure departs from this goal in the extremes (young and very old), with offsetting surpluses in mature cohorts. DFW plans to apply even-aged silviculture (shelterwood with reserves, aggregated retention cuts) on two-thirds of their land base, with group selection on a 30-year cutting cycle on the remaining one-third. In an analysis completed just prior to the field audit, DFW estimated the long-term even-flow harvest using a simple IRAM spreadsheet algorithm at 8.1 mmbf/yr from 1,615 acres/yr (base area of 76,500 acres under active management. Assuming a 90-year rotation on the even-aged component of the forest regenerates 552 acres per year; 25% of the group-selection acreage is also regenerated at each 30-year entry, or 213 acres per year, for a total of 764 acres per year (essentially 1% of the operable forest).

DEM

Although DEM has been conducting good forestry on-the-ground at the stand level, there is essentially no explicit up-to-date forest regulation strategy. According to dated memoranda provided to the team, a volume-based allowable cut of 16.8 million board feet was developed from the CFI database in 1981. In 1983, this was netted down to an “attainable” harvest of 6.6 MMBF, a volume that has not been produced since the early

1980s (p. 157, *Generic Environmental Impact Report*, 1992). No evidence was provided that DEM has ever set area goals for a forest structure or corresponding harvest targets to achieve such, despite the recognition that the present structure is extremely unbalanced (p. 14, *Interim Strategic Planning Report*, 2002). In their response to the team's request to characterize their forest regulation strategy, DEM stated that they "have recently adopted an ecosystem management strategy....seeking to achieve a desired future condition," but this condition has not, to our knowledge, been specifically identified.

General Evaluation

A striking feature of EOE's timber management programs is the fact that no agency is required to produce an even flow of forest products to generate income and thereby "stay in business." Simple area regulation is the chosen paradigm, at least for two agencies, seemingly with little explicit concern for the timber volumes and revenues that flow from such an area-based approach. This stands in distinct contrast to virtually all other landowners evaluated under SCS's criteria in eastern North America, both public and private, where maximum long-term sustained yield of products and revenues is usually a dominant consideration. Thus, the usual concern under this criterion – possible *over*-harvesting relative to the long-term sustainable capacity of the forest – is not nearly as important as in other evaluations, because these agencies' other revenue sources buffer them from such pressures.

The absence of an even-flow harvest volume objective does not mean that this criterion is somehow less important; however. Indeed, if the goal is a stable long-term forest age structure for purposes other than even-flow of timber, then the consequences of *under*-harvesting are potentially as severe as over-harvesting. If the goal is a desired future condition of the resource, defined by these agencies as a reasonably balanced age structure that includes significant areas of early successional habitat, then allowing most of the forest to become "old" is arguably a non-sustainable management strategy and thus equates to weak performance.

Table 9.A.1. Summary of timber resource statistics and long-term Annual Allowable Cut(AAC) by EOE Agency and District. The Maine Bureau of Parks and Lands (BPL), certified in 2001, is shown for reference.

District	Inventory			Harvest Strategy		
	Forest Area (acres)	Gross MBF	MBF/ac	Calculated AAC (MBF)	Calculated AAC (total acres to harvest)	Calculated AAC (net acres to regenerate)
N Berkshire	39,989	350,526	8.766	3,845		
C Berkshire	31,254	365,853	11.706	3,845		
S Berkshire	41,307	476,163	11.527	3,845		
W Connecticut Valley	28,646	318,908	11.133	2,792		
E Connecticut Valley	39,228	366,942	9.354	724		
Mid-State	32,067	283,062	8.827	1,074		
Northeast	24,276	266,664	10.985	665		
Southeast	41,803	172,188	4.119	71		
Total, DEM	278,570	2,600,306	9.334	16,862	<i>not done</i>	<i>not done</i>
		"Attainable AAC (1983)"		6,610		
DFW	75,927	Unknown		8.1	1,864	764
Ware River	16,407	139,460	8.5 (est)		492	164
Wachusett	11,307	101,763	9.0 (est)		339	113
Quabbin	47,375	454,661	9.597	16,582	1,421	474
Sudbury	1,269	11,421	9.0 (est)		38	13
Total, MDC	76,358	707,305		20,000 +	2,291	764
Maine BPL	349,414				16,320	

Table 9.A.2 assembles data from various sources on the recent harvesting activity on EOE lands. Actual performance is compared to the agencies' own targets, and with harvests from another recently certified public agency in the Northeast, the Maine Bureau of Parks and Lands. Here, we see a clear difference between MDC, which is doing a reasonable job of meeting its area AAC targets (67% overall, 80% at Quabbin), versus DFW and DEM which have been harvesting only a small fraction of their potential (9-12%). (The high over-harvest in the Southeast DEM District is an artifact of an unexplainably low AAC volume target, Table 9.A.1).

Data in Table 9.A.2 can also be expressed in terms of two simple benchmarks of sustainability:

- the effective cutting cycle (i.e. the number of years required to harvest the entire resource once at the present rate), and
- the “years to depletion”, or the time required to harvest the current standing inventory, assuming no growth.

Table 9.A.2. Annual harvest statistics for the EOE Agencies. Data are annual averages over the most recent 5, 6, and 3-year periods for DEM, DFW, and MDC, respectively. The Maine Bureau of Parks and Lands (BPL), certified in 2001, is shown for reference.

District	Annual Harvest				Annual Harvest as a:			
	Area (ac)	Gross MBF	MBF/a c	\$	% Total Area	% Total Inventory	% Volume. AAC	% Area AAC
N Berkshire	69	387.2	5.612	51,425	0.17%	0.11%	10.1%	
C Berkshire	47.2	341.4	7.233	79,870	0.15%	0.09%	8.9%	
S Berkshire	83.4	524.4	6.288	107,407	0.20%	0.11%	13.6%	
W Connecticut Valley	16.4	119.8	7.305	22,390	0.06%	0.04%	4.3%	
E Connecticut Valley	40.2	114.2	2.841	15,135	0.10%	0.03%	15.8%	
Mid-State	119.8	281.6	2.351	35,526	0.37%	0.10%	26.2%	
Northeast	28.8	59.6	2.069	7,490	0.12%	0.02%	9.0%	
Southeast	89.4	212.8	2.380	16,388	0.21%	0.12%	299.7%	
Total, DEM	494.2	2041	4.130	335,632	0.18%	0.08%	12%	
					"Attainable AAC (1983)"		31%	
DFW	169	588	3.480	58,474	0.22%	<i>unknown</i>	7.3%	9%
Ware River	146	800	5.479	108,314	0.89%			30%
Wachusett	228	246	1.081	33,307	2.01%			67%
Quabbin	1,131	5,750	5.086	778,551	2.39%	1.26%		80%
Sudbury	19	68	3.643	9,206	1.47%			49%
Total, MDC	1,523	6864	4.507	929,338	1.99%			67%
Maine BPL	6,756			\$1,791,533	1.93%	1.70%		41%

Again, we see reassuring performance for the MDC lands; their overall effective cutting cycle of 50 years is somewhat longer than their target, but is quite comparable to the Maine

BPL at 52 years. In contrast, DEM and DFW's actual cutting cycles are more than an order of magnitude longer than their goals; at recent harvest rates, the DEM sawtimber inventory would last an incredible 12 rotations if the trees could actually live that long. Note also in Table 9.A.3 the large difference in areas harvested per forester between MDC and DEM.

EOEA Summary Assessment relative to the SCS criteria

Strengths

- Two agencies (MDC and DFW) have clear, albeit very simple, forest regulation strategies based on a target forest structure, to be achieved by area-controlled harvests apportioned appropriately between single- and multi-aged stands.
- MDC and DFW's forest regulation approaches are consistent with their silvicultural systems used. On-the-ground practices for these agencies are strongly area-driven, with clear expectations about regenerating defined percentages at each entry. MDC even tracks these formally at the stand level in their GIS on at least two major watersheds.
- There is absolutely no evidence of over-harvesting or non-sustainable timber extraction on any EOEa lands, or any evidence whatsoever that financially driven harvest strategies override ecological issues. Recent management on DFW and DEM lands has been extraordinarily conservative, to the point where under-harvesting is the main concern.
- MDC's regulation strategy is explicitly designed to be robust against the region's major natural disturbance, a severe hurricane, though it will be many decades before the target forest is achieved.

Table 9.A.3 Benchmark harvest statistics for the EOE Agencies. Data are annual averages over the most recent 5, 6, and 3-year periods for DEM, DFW, and MDC, respectively. The Maine Bureau of Parks and Lands (BPL), certified in 2001, is shown for reference.

District	Acres of Effective Cutting Cycle	Years to Depletion, Assuming No Growth	# of Forestry Staff Responsible for Timber Sales	Acres of Sales per Forester Per Year	\$ of Sales per Forester Per Year
N Berkshire	580	905			
C Berkshire	662	1,072			
S Berkshire	495	908			
W Connecticut Valley	1,747	2,662			
E Connecticut Valley	976	3,213			
Mid-State	268	1,005			
Northeast	843	4,474			
Southeast	468	809			
Total, DEM	564	1,274	13-16	31-38	\$ 20,977- \$25,818
DFW	449		2.5	68	\$ 23,389
Ware River	112		2	73	
Wachusett	50		2	114	
Quabbin	42	132	3	377	\$
Sudbury	68				
Total, MDC	50		7	218	\$ 132,762
Maine BPL	52	59	17	397	\$ 105,384

Observations and Concerns

- For two agencies (DEM and DFW), there appears to be little connection between the nominal forest regulation strategy and their on-the-ground harvest activity. This manifests itself in several ways:
 - ✓ The DFW strategy is brand new and its simple even-flow nature does not bear any obvious relationship to the agency's forest structure goals outlined in the 2000

Forest Management Guidelines document – a deficiency which DFW staff clearly acknowledges. Furthermore, comparison of DFW’s newly derived targets with recent activity reveals a large mismatch. DFW would need 6-8 foresters, working at the rate of the MDC staff, to accomplish this program, whereas they currently have only one forester responsible for sale activity.

- ✓ The DEM allowable cut strategy is over 20 years old, but according to their response to our information request, the agency has not “perceived a need to recalculate it.” DEM staff further characterize their allowable cut as “...academic, since DEM has never even come close to the calculated harvest...” Because DEM’s forest regulation strategy effectively exists only on paper, not in practice, we conclude that this agency’s performance does not warrant a certifiable score for this criterion.
- ✓ The data reviewed above (especially Table 9.A.3) do not support DEM’s assertion to the team, as well as statements in the 2000 *Draft Strategic Planning Report* and other recent documents, that the low rate of timber sales is a consequence of understaffing and lack of resources. This is especially noteworthy for two reasons: DEM has recently contracted marking of some timber sales to outside consultants, and several recent timber sales (at least in western districts) are large-scale liquidation clearcuts of diseased Norway spruce plantations that require little effort in marking and layout. So, unlike DFW, which is unquestionably grossly understaffed relative to their forest management goals, we believe that DEM could do more to accomplish their targets with existing staff.
- Because even-flow sustained yield has not been an objective for EOEA agencies, perhaps it is not surprising that little attention has been paid to predicting stand yields under various silvicultural scenarios. Nevertheless, it is commonplace when carrying out regulation analyses to construct stand-level yield curves; these curves are then embedded in a forest-level harvest simulator. The main use of stand simulators is to predict volume yields from a particular harvest schedule that is either developed externally and “forced” into the model, or one that is derived by the model using optimization techniques based on agency objectives (e.g., sustained yield, balanced structure, etc). The value of accurate yield curves in such a management situation derives from their ability to forecast revenues from an area-based strategy, not to sustain a particular yield.
- Of the EOEA agencies, only DFW has attempted to develop stand yield predictions, and only for very broad strata that do not constitute biological “stands” on the ground. DFW used the NE-Twigs simulator embedded in NED-SIPS to create these curves from temporary inventory data collected during the prior decade. While the use of NE-Twigs makes some sense lacking any local datasets, both DEM and MDC have a considerable untapped potential to develop stratum-specific empirical yield curves from their CFI databases that span nearly 40 years, and we strongly urge them to do so.

- How stands or compartments are actually prioritized and scheduled for harvest was not really explained in any documentation afforded the team. The agencies believe that stand harvest priorities are an important part of DFW guidelines, DEM zones, MDC management plans, overviews that all agencies adhere to in determining where to cut next. While not based on sophisticated stand and forest growth and yield modeling, these overview documents do provide some guidance about stand selection. Often absent was the important “big-picture” context of why a particular stand was being harvested instead of another one. Further, limited time in the field precluded extensive discussions of how foresters from the various agencies decide “where to cut, when.” Nevertheless, with perhaps only minor exceptions, we found that all stands being harvested seemed appropriate to treat silviculturally in some way. But this is hardly surprising in a forest like Massachusetts where the dominant condition is small to medium-size sawtimber stands with a history of under-harvesting or inadequate treatment in the past. So, while we rarely questioned foresters’ specific judgments about why a particular block was being cut, priorities seem to be set largely on the basis of stand-level criteria and the foresters’ knowledge of the resource.
- The consequence of the above point is that the forest structure simply evolves from the sum of individual stand-level actions – a “bottom-up” defacto regulation strategy. When this is coupled with the very low harvest rates on two agencies, the result is a situation where foresters exercise virtually no control over future forest structure. This must change if the agencies take seriously their ecosystem management goal of directing the forest toward a desired future condition, which dictates that stand treatments be derived from a “top-down” modeling approach.
- With one exception (MDC’s application of a hurricane simulation model to assess risk of catastrophic loss), no resource-level simulation models have been applied to any agencies’ planning endeavors. While this is not an explicit requirement under the A.1 criteria, it is generally understood that deriving a contemporary forest management strategy for a large resource, especially one based on an ecosystem-management paradigm implemented across agency boundaries, is way beyond the capability of simple manual methods. While the area-based strategies of MDC and DFW are conceptually sound, it is hardly likely that a harvest regulation strategy characterized by unchanging, constant-area targets is the optimum pathway to achieve and maintain a particular forest structure in the shortest possible time. We believe the agencies would benefit greatly from a more rigorous and sophisticated implementation of this basically sound approach.

Conclusions

MDC

Based on the findings above, we believe that MDC’s performance is strong relative to the criteria. MDC’s forest regulation strategy, although perhaps oversimplified, is clearly and

logically directed at the agency's water-quality mandate while accommodating substantial levels of timber harvest as well as many biodiversity considerations. The field staff takes area harvest targets seriously, although some watersheds come closer to meeting them than others.

DFW

DFW's forest regulation strategy is conceptually sound but has not been seriously implemented due to serious understaffing in the agency. The approach used in the recent IRAM exercise can form the basis of a more sophisticated simulation-based approach, and deserves commendation as a good start. We believe this level of performance satisfies the criteria, but does not merit as high a score as MDC, which has a longer record of demonstrable accomplishment.

DEM

For reasons outlined above, the team believes that DEM effectively lacks a viable forest regulation strategy and thus does not meet the key indicator for this criterion. DEM's 1995 policies encouraging age diversity via distributed regeneration cutting are a good start, but we did not encounter any examples where these policies were incorporated in specific plans in specific compartments for a specific forest. Furthermore, the harvest levels of the recent past are unacceptably low for an agency charged with a forest management mandate with the apparent resources to accomplish more. This level of performance is reflected in the sub-passing score for this criterion, and hence, a condition to address the deficiencies.

Finally, the team strongly believes that the most critical need under forest regulation for all agencies is to discard the present "bottom-up" stand-level approach and substitute contemporary resource-level planning and analysis tools. The unstated assumption of past EOE management seems to be that as long as individual stands are treated with appropriate silvicultural methods, at the appropriate rates (areas) annually, the forest structure will evolve to take care of itself. While such an approach may satisfy the criteria, and may be sufficient for woodlot-scale operations, it is hardly optimal relative to the potential of modern methods and the agencies' multiple objectives on large ownerships. The most robust forest regulation strategies come from the "top down," using forest level simulation tools to project and portray visually the various possible futures available. Once the future is chosen based on both technical and socio-economic factors, the stand-by-stand harvest strategy needed to achieve it becomes explicit. The resulting silvicultural practices and systems, as well as the areas treated under various methods, are far more robust and defensible when conducted within such a strategic context than if simply prescribed on stand conditions alone.

In summary, we believe it is essential for DEM, with no present forest regulation strategy, to develop one; hence the conditions below. We also believe it is highly desirable for DFW and MDC to contribute to and participate in such a process, with the

goal of developing a custom analytical framework that can be shared and used by all agencies

April 2004 Update: A conceptual methodology for long-term resource allocation analysis and allowable cut calculations has been discussed and agreed upon. The funding (\$10,000) has been secured for a contract with a mensurationist to document the area-based methodology, which will satisfy FSC P&C 5.6. The contract is anticipated to be executed by May 2004 and a proposed strategy developed by December 2004. The site plan for the Federation of Women's Forest follows the area-based strategy that will tie in with the long-term resource allocation plan.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
<i>70(re-scored as 75 April 2004)</i>	<i>82</i>	<i>90</i>

Condition DEM 2002.2: Within 1 year of award of certification, DEM must demonstrate staffing and funding required to complete the allowable harvest calculations using the planning methodology outlined in Pre-condition 2002.1. The allowable harvest calculation must be complete for all DEM properties within 3 years of award of certification.

Condition DFW 2002.3: Within 2 years of award of certification, DFW must complete a forest inventory (except for those properties acquired within the last 12 months).

Update: June , 2003; DFW has contracted with a private vendor (James W. Sewall Co.) to design an inventory to generate allowable harvest data, and to quantify tree, shrub, and herb composition on DFW lands. DFW has also contracted with consulting biologists and ecologists to carry out this work

A.2. Stocking and Growth Control.

Background

The stocking and growth criterion evaluates the landowner's silvicultural program in terms of its effectiveness in keeping harvested stands in a productive, well-stocked condition. Emphasis is given to both current mature growing stock and regeneration, depending on the silvicultural objective. Evaluation criteria also incorporate how well biodiversity issues are balanced with timber objectives in the silvicultural program.

Silvicultural issues are an important focus of the field evaluations. In all, the team visited 59 different sites that had been recently harvested mainly in the past few years, or stands that had been marked but not yet harvested (Table 9.A.4). Site evaluations included assessments of regeneration, treatment of the growing stock, retention of vertical structure, whether or not the stand was marked, and the logging system(s) used. Utilization of the harvested timber and damage to the site and residual trees were also recorded; these are analyzed under criterion A.5, below.

Table 9.A.4. Distribution of silvicultural practices on the sites visited during the field evaluation, August 2002.

Silvicultural System or Practice	DEM	DFW	MDC
<i>Single- or Two Aged Systems:</i>			
Uniform Shelterwood Establishment Cut	10	1	0
Uniform Shelterwood Removal Cut	4	5	5
Group or Irregular Shelterwood Cut	3	3	4
Intermediate Treatment (Thinning, Improvement Cut)	13	0	0
Salvage Clearcut (conifer plantation)	3	0	2
<i>Multi-aged Systems:</i>			
Single-tree Selection	2	0	2
Group Selection	0	0	2
Total Sites Evaluated	35	9	15

Documentation provided to the team, as well as the weight of the evidence in Table 9.A.4, establishes that silvicultural practices on all EOEA lands are dominated by single-aged systems or two-aged variants thereof. This is a natural consequence of the history and resulting even-aged structure of most upland forests in the Commonwealth, having

originated after old-field abandonment or clearcutting of the first-generation old-field stands in the decades surrounding 1900. The dominance of the shelterwood regeneration method reflects the well-established importance of advance regeneration in reproducing northern red oak and eastern white pine, the species that account for the bulk of the timber revenues on all lands except perhaps parts of the Berkshires. The fact that regeneration cuttings are becoming more common than intermediate practices does not raise any concerns; this is logical consequence of the maturation of large areas simultaneously throughout the Commonwealth. The dominance of single-aged silviculture and increasing emphasis on regeneration cutting manifest themselves somewhat differently among the various agencies:

MDC

In their management plans, MDC describes their silvicultural systems as an attempt to create a finely patterned mosaic of three-aged stands, with the younger two age classes separated by about 30 years (the nominal cutting cycle). Such a structure is designed to be less vulnerable to localized catastrophic losses from severe hurricanes, accomplished by dispersing the vulnerable older cohorts within a generally younger and less vulnerable matrix. Depending on the size of the regenerated patches, such operations would be characterized as either group selection or group shelterwood cuttings using standard silvicultural terminology; the breakdown in Table 9.A.4 reflects this characterization as made by the team. Only slightly over half (8/15) of the operations visited were of this type; the others were more complete stand-wide removal cuttings (Ware River) or plantation salvage cuts (Ware River and Quabbin). Our field sample differs somewhat from Quabbin's practices. According to their database, 71% of harvests (by area) are of the "regenerate one-third group selection" type; most of the remaining treatments (27%) are removal cuts that regenerate about two-thirds of the stand area.

DFW

DFW's management has emphasized regeneration cutting and the creation of early seral habitat on larger uniform blocks; no intermediate treatments have been done since at least 1997. About two-thirds of these operations are first-entry shelterwood cuts, typically applied in a group-wise pattern that mix establishment and removal cuttings in the same stand and thus encourage horizontal diversity. In documentation provided to the team, DFW's forest management strategy allocates one third of their forest land to multi-aged systems; however, no such cuttings were listed in a 6-year summary provided to the team, and none was observed in the field.

DEM

DEM exemplifies the traditional application of guidelines found in various silvicultural handbooks published by the U.S. Forest Service. These guides embody a cookbook decision-tree format based on intensive pre-harvest inventory of both overstory and advance reproduction, quantification of relative density according to published stocking guides, and uniformly applied, stand-wide treatments. Multi-aged selection cuttings are rare; only two were visited (northern hardwood stands on a single State Forest) and a 5-year summary provided by DEM listed 171 acres of single-tree selection cuts (7% of all

area), all in three sales in the Northern Berkshires. Where uneven-aged treatments are specified, they employ an appropriate “Q” factor and maximum tree size to guide the cutting.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- With very few exceptions, silvicultural treatments on all agencies were of high caliber relative to professional and scientific standards for the region. We found absolutely no evidence of high-grading, economically driven harvesting, diameter-limit cutting, or otherwise expedient practices indicative of poor stewardship.
- All silvicultural systems use exclusively natural regeneration of well adapted, native species. Maturing conifer plantations, largely a positive legacy of successful reforestation efforts ca. 1910-1940, are managed to maturity and regenerated naturally. The only plans for artificial regeneration encountered were on MDC holdings, where 20-100,000 seedlings have been established annually in enrichment plantings. On Quabbin, small-scale enrichment planting trials of tolerant conifers to replace dying eastern hemlocks killed by the introduced woolly adelgid are being considered. The Wachusett management plan mentions enrichment planting as an option where species composition cannot be changed naturally (i.e., establishing white pine under dry-site oak stands), but we did not actually observe this practice in the field.
- All agencies follow a rigorous pre-harvest survey and prescription process. DEM and DFW appear to do this a bit more formally and quantitatively than MDC staff, who rely appropriately on extensive local knowledge and decades of personal experience.
- For all agencies, all prescriptions are marked or otherwise designated by professional staff. This level of personal attention to prescription details is far above regional norms, especially those on large ownerships.
- The group- and gap-oriented shelterwood/selection systems used increasingly by MDC and DFW represent an innovative, state-of-the-art approach to converting the present even-aged forest to a more natural, irregular age and height structure over the upcoming rotation. We believe this will reap benefits not only in terms of hurricane resistance but also in enhancing biodiversity in its various forms, with little or no negative impact on timber productivity.
- All agencies have policies to retain vertical structure and significant habitat features (legacy and cavity trees, mast producers, etc). All DFW’s prescriptions were rated as exemplary in this regard; MDC and DEM also incorporate such structural elements, though they did not appear to be as numerous on the operations we visited.

- Regeneration of desired species was usually well represented on prescriptions where this was the main objective. We saw little evidence of some negative trends affecting eastern hardwood forests, such as long-term conversion to lower-value species such as red maple, excessive herbivory by white-tailed deer, or dominance of understories by invasive exotics. The Quabbin reservoir has a well known history of excessive deer browsing, but deliberate and progressive actions begun a decade ago have greatly diminished this problem.

Observations and Concerns

- To address the perceived understaffing issue and allow foresters to spend more time on making prescriptions, DEM has delegated timber marking in certain Districts to contract consultants or crews of student interns. Our field sample suggests this policy has been implemented a bit unevenly; results are not always satisfactory to the DEM, who then must either remark the contracted area or accept an outcome that is less than desirable.
- Recent retirements, personnel transfers, inexperienced foresters and perhaps other internal factors have occasionally led to minor problems in prescription outcomes on DEM lands. For example, an apparently healthy natural red spruce stand was included in a recent salvage operation of nearby diseased Norway spruce plantations on the October Mountain State Forest.
- Contemporary silvicultural systems involving within-stand regeneration of groups or large patches, done specifically to enhance diversity and structure of the present unnaturally even-aged forest, do not appear to be routinely considered in the “classical” DEM prescription process, as it is by foresters working for DFW and MDC. In our judgment, many of the 13 stands in which uniform thinnings or improvement cuts (i.e., no regeneration) were prescribed by DEM could have also been treated by a group shelterwood entry with the aim of accelerating the regeneration process in portions of those stands. Here, we urge DEM foresters to look beyond the SILVAH expert system, which tends to reinforce a single, uniform, stand-wide prescription, to other more spatially diverse silvicultural systems specifically designed to enhance stand structure.
- MDC’s policy against use of herbicides prevents them from taking more effective action in dealing with the worst of the overpopulated deer legacy (understories dominated by unpalatable interfering vegetation that prevents tree regeneration, reputedly serious on the Prescott Peninsula which we did not visit) as well as the spread of invasive exotics such as Japanese barberry.
- The very small forestry staff of DFW may sometimes limit supervision of ongoing timber sales to a less-than-ideal level. One fairly large sale on the Fox Den WMU had minor problems relative to leaving designated retention patches of hemlock,

residual mast-bearing oaks, and a potentially hazardous situation involving the incomplete removal of a temporary bridge.

Summary

Overall, the team was very impressed with the high quality of silvicultural practice on the EOE A's forest lands, which is reflected in the high scores for this criterion. MDC's silviculture program is imaginatively conceived and extremely well implemented. If retention of structural and habitat elements were afforded a higher priority, it would be virtually impossible for us to criticize. DFW's silviculture program is equally as innovative and cutting-edge scientifically; expanding its scope to include the full gamut of prescriptions including true multi-aged systems is the main need for refinement. DEM's fine performance could be improved by expanding their range of silvicultural options to more irregular stand structures and addressing quality-control issues involved with marking and implementation of prescriptions.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
90	95	98

There are no conditions or recommendations for this criterion.

A.3. Pest and Pathogen Management Strategy.

This criterion assesses threats to timber sustainability posed by potential pest and pathogen attacks, and the company's efforts to manage them. Credit is given for explicitly incorporating possible effects into wood supply analysis (robustness issues), using silvicultural (non-chemical) means to combat pests by developing naturally resistant stand compositions and structures, and for ensuring adequate funding for any direct control measures.

For reasons detailed below, all EOE A agencies rate highly in their management of various pests and pathogens that affect the forests of the Commonwealth. Other than the treatment of invasive exotic plants with herbicides, there have been no chemical treatments of any kind in recent years. Silvicultural methods are used almost exclusively, and this is not expected to change.

EOE A Summary Assessment relative to the SCS criteria:

Strengths

- In general, the agencies' collective emphasis on managing natural forest structures and compositions – emphasizing silvicultural control almost exclusively over chemical means -- provides the best long-term, ecologically based defense, and thus scores highly relative to the criteria.
- Because none of the EOE agencies is critically dependent on sustained, high levels of timber revenues, possible mortality from large-scale outbreaks is not the threat to sustainability that it might otherwise be in a large private or industrial ownership.
- Encouragingly, the gypsy moth, a historically serious defoliator of oaks and related species, seems to be increasingly under control from a naturalized complex of the introduced *Entomophaga* fungus and other introduced control agents.
- The major threats to eastern white pine, a very important and widely distributed commercial species in Massachusetts, are managed effectively with silvicultural and sanitation measures. The white pine weevil, which kills terminal shoots and can cause serious stem deformities in open-grown saplings, is controlled using the shelterwood method and recruiting dense natural, mixed-species regeneration. White pine blister rust, a potentially serious introduced fungus, has been greatly diminished by very effective, long-standing government programs to eradicate and prevent the planting of the alternate host, *Ribes* spp.
- Although deer browsing can create localized problems, regeneration cuttings throughout the Commonwealth do not appear to be systematically threatened by excessive herbivory from white-tailed deer, as they are in Pennsylvania, Wisconsin, and other places in the northeastern US. Where this had been a problem (e.g., Quabbin), MDC effectively managed the situation so that it is no longer the silvicultural bottleneck it once was.
- As described above, MDC's plan to diversify landscape forest structure in order to reduce vulnerability to severe hurricanes is an exceptional, well conceived approach to deal with serious abiotic threat using very proactive, rather than reactive, methods.

Observations and Concerns

- By far the largest concern of all agencies is the introduced hemlock wooly adelgid, a pervasive and spreading tree-killer for which there is no known control. A statewide loss of hemlock, predicted as inevitable by some experts, would fundamentally change many upland ecosystems, particularly in central and southeastern Massachusetts where hemlock is among the most dominant species. The hemlock forest type possesses unique values for esthetics, effects on

- microclimate, and value for wildlife habitat; e.g., enhanced breeding bird diversity; winter cover for white-tailed deer, porcupine, fisher, red squirrel, and ruffed grouse.
- Although stumpage values for hemlock are low relative to other species, it accounts for 15-18% of the sawtimber volume on four DEM districts (central and western); on Quabbin alone, there are 34 million board feet of hemlock (7.5% of all sawtimber) worth over a million dollars.

DFW and MDC have drafted in-house policies to address the spread of this pest that stress conservatism and limited presalvage. If DEM has a policy, it was not mentioned in their response to our information request. Clearly there is no consensus on this topic among either scientists or managers, and we believe it would be in the collective interest of EOE and the Commonwealth generally if an interagency task force were formed to address the HWA issue. Such a committee was formed in the past 2-3 years, as a component of EOE's Biodiversity Initiative, specifically to deal with Invasive Invertebrate Species, chaired by Sharon McGregor, undersecretary of EOE. There are representatives from DEM (Charlie Burnham), DFW (Tom French), and MDC (Thom Kyker-Snowman) on this committee. Two of the annual meetings of the Quabbin Science and Technical Advisory Committee in recent years have dealt exclusively with the HWA problem. QSTAC includes foresters from all three agencies.

April 2003 Update: Since the time of the field evaluation, DEM (through its Forest Health program and the USFS) awarded a grant to Dr. David Orwig of Harvard Forest to develop a silvicultural strategy based on an analysis of data collected in CT as well as in the sections of MA where the adelgid now exists. Additionally, DEM-BOF's Forest Health program has released adelgid predators at a number of locations and is monitoring their survival and efficacy. DEM, through its CFI, both previous and current measurements, has determined that in excess of 20,000 acres with a significant hemlock component are at risk on DEM land and that the economic and ecological consequences will be extremely significant. Once Dr. Orwig finishes his work, DEM-BOF and the other EOE agencies will have a quantitative basis for developing an adelgid management strategy

- Because the agencies have not carried out any long-term simulation modeling of the resource, it follows that they have not explicitly identified the long-term consequences of the adelgid infestation, or for that matter, other currently benign pests that could reach epidemic status if much of the forest reaches physiological maturity and thereby loses vigor and its ability to resist various stresses.
- On MDC and DEM lands, plantations of exotic conifers, Norway spruce and red pine (native to North America but not to sites where it has been planted) established on old fields between 1910 and 1950, are commonly affected by root rots causing spotty to stand-wide mortality. Prior to the root rot infections, such plantations often have grown very well and have accumulated high volumes, dictating a salvage response to capture the values at risk. Because these

plantations are not being replanted, this appears to be a one-time phenomenon that will be largely over within a decade, and thus is not a chronic concern. Regeneration following plantation salvage cuttings appears to be dominated by mixtures of hardwood species, sometimes with a component of naturally regenerated spruce, and will thus tend to be more resistant to any recurrence of root rots.

In summary, MDC's hurricane aversion strategy, in combination with their other tactics, places it slightly above the others here. DFW's thoughtful policies on adelgid and invasive plants also warrant high marks. DEM's tactical responses to root-rot salvage and general silvicultural control measures are commendable; the slightly lower score for this agency results from DEM still being in the early stages on developing a discernable policy on hemlock adelgid.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
87	92	95

Recommendation 2002.1 – Hemlock Adelgid Strategy Task Force.

We urge the several agencies to form a task force involving leading scientists and pest management experts of the region to formulate a scientifically based, adaptive-management strategy (or alternative strategies) for dealing with the consequences of the present hemlock adelgid. These strategies should then be examined as an integral part of the upcoming ecoregional planning process.

A.4. Forest Access.

This criterion evaluates the quality of the landowner's road system, both in terms of its ability to provide access for harvesting and other management activities, as well as its environmental performance in terms of erosion and siltation.

Unlike northern Maine, which was never settled and cleared for agriculture, Massachusetts's forests are mostly growing on former agricultural land, and thus are criss-crossed by old town roads bounded by stone walls that once linked these rural societies. Characteristic Yankee frugality creates a natural tendency to re-use these roads whenever feasible, reconstructing or otherwise refurbishing them to serve the immediate needs of a harvesting operation. Construction of entirely new roads appears to be quite rare and is usually limited to relatively short relocations within an existing infrastructure.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- Relative to SCS criteria, areas consumed by rights-of-way are quite minor compared to other regions; roads are narrow, and often have canopy closure overhead. According to data supplied by MDC and DEM, roads of all categories occupy only 1.3% of the land base on these ownerships, assuming a 30-foot right-of-way (narrow by many standards). A theoretical benchmark, assuming a perfectly geometric pattern with a one-chain (66 feet) right of way and a 20-chain (0.25 mile) skidding distance is 2.5%.
- MDC lands under long-term ownership are fully accessible and reasonably well maintained, mostly by in-house employees and equipment. The Wachusett plan acknowledges that access of recently acquired lands is often not as good. Limited observations found no environmental problems from substandard road construction or maintenance, which of course is to be expected on these lands where water quality is paramount.
- At least for MDC and DFW, it did not seem that inadequate access was an impediment to forest management. DEM also appears to have good access overall, although some forests, especially those in the more mountainous western districts, would require additional construction to fully access the resource. For all agencies, where upgrades or new construction are needed, the relatively high timber values on most sales readily justify such investments.
- The few instances of road construction we witnessed appeared to follow the Massachusetts BMPs, though limited field time did not permit us to make a thorough sample of BMP compliance for all agencies.

Observations and Concerns

- DFW has no comprehensive inventory of their road network, and DEM's inventory is quite outdated.
- DEM and MDC are either reluctant or institutionally unable to contract road and bridge improvements separately from timber sales. On these lands, construction and upgrades are funded indirectly by accepting lower stumpage rates for the associated timber sale. MDC foresters commented they would often like to do more with their roads, but are largely limited to what they can accomplish with their own crews.
- On DFW and DEM lands primarily, uncontrolled and illegal ATV use often defeats the agencies' desires to close certain environmentally problematic sections of road.
- Although new construction and other roadwork associated with timber sales appear to meet high standards, we observed (mostly on DEM forests) several instances of unacceptable erosion and sedimentation problems from inadequately maintained old roads that have not been recently used for logging access but remain in use by the public.

Summary

MDC's access system is well documented, and meets their needs for management quite well without significant environmental problems; hence, their high score. Where timber is harvested on DFW lands, roads are typically upgraded to decent standards. However, DFW has no road inventory and appears to lack access to some tracts. DEM lands are less accessible overall, and have more miles of inadequately maintained roads than the others.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
70	78	92

Condition DEM/DFW 2002.4: Within 2 years of award of certification, DEM and DFW must complete an inventory of their respective road networks and then develop and implement a work plan⁶ for mitigating erosion and access problems. Because erosion problems often result from illegal access onto roads that are already closed, DEM and DFW should develop and implement a strategy to improve enforcement of existing road closures. Erosion and access problems that are classified as the highest priority should be scheduled for closure or rehabilitation within 3 months of being identified. In other words, DEM/DFW must not wait until the entire inventory is complete before dealing with major problem areas.

Condition DEM/DFW 2002.5: Within 3 years of award of certification, and as part of the management planning process, DEM and DFW must develop a long-term access plan for timber management that includes maps of existing truck roads, plans and target dates for completion of roads to be built, schedule for road maintenance and road closures.

A.5. Harvest Efficiency and Product Utilization

This criterion evaluates how well the landowner merchandizes and markets forest products, and how well harvesting equipment and systems are matched to the biological demands of the silvicultural prescription. At each harvest sites, the team recorded unutilized material (if any), the area taken up by skid trails and landings, and any damage to residual trees resulting from harvesting equipment.

Unlike most larger private ownerships in New England, the EOEa agencies do not generally contract directly for logging services, but rather sell stumpage by an open, highest-bidder take-all, process. We were surprised to find all timber being sold on a lump-sum basis (rather than by mill scale). This system seems to meet the needs of the

⁶ Work plan – An acceptable work plan should include specific objectives and tasks, personnel responsible for carrying out tasks, and a timeline for accomplishing the plan.

agencies, though it does create supervision problems (to prevent unmarked wood from being stolen) not inherent with other systems.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- No examples were found of high-value products being wasted or poorly utilized. Occasional examples of high stumps and small-diameter pulpwood-quality material being left on landings were noted. Under the lump-sum procedure, such losses are not incurred by the landowner, so the only cause for concern is roadside aesthetics.
- The increasing use of forwarders, coupled either with manual or mechanized felling, is a very positive and welcome development relative to the environmental aspects of logging operations and the ability to leave high-quality, undamaged residual stands. MDC in particular was credited by local stakeholders for supporting local contractors in acquiring such technology, which has a beneficial spillover effect on private lands in the region. All agencies routinely specify such equipment where skidding would be inappropriate.
- All agencies seem to keep residual stand damage at low levels; we saw only one instance (MDC, Ware River) where damage (in this case, to large advance regeneration) was excessive.
- No instances were noted of overzealous utilization threatening key structural features, such as large standing cull trees, snags, and large downed logs.
- Whole-tree chipping operations are very rare on all lands, and are used only for very specific objectives not achievable by conventional logging methods.

Observations and Concerns

A few situations were noted on DFW and DEM sales where it appeared that the contractors had cut some trees that were not marked or otherwise designated as part of the prescription. None of these compromised the prescription outcome, however.

Summary

All agencies' performance here is excellent; MDC's slightly higher scores result from their leadership in pursuing modern, less damaging technologies.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
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95	95	97
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There are no conditions or recommendations for this criterion.

A.6. Management Plan and Information Base.

Background and General Assessment

Although our evaluation places the greatest weight on actual and projected forest conditions and landowner performance, it nonetheless recognizes that exemplary and sustainable forestry is not ad hoc timber harvesting and that management should be guided by an effective and operational written plan that provides the long-term context and continuity for the actions taken at any point in time. Further, effective management must be based upon a solid information base. True management, as opposed to opportunistic exploitation, is built upon working knowledge of resource conditions and the effects of the full range of human interventions. Specific expectations regarding management plans and supporting information are found in Principles 7 and 8 of the *SCS- Final Interim Standard For State Forestlands In Massachusetts* in effect for this evaluation.

MDC

MDC prepares very detailed management plans for each watershed unit. The Quabbin plan is dated 1995 and covers through 2004; the plan for the Wachusett watershed is dated 2001 and runs through 2010. Revisions to older version of the plans for Sudbury and Ware River are in draft form, but are sufficiently complete to permit a full evaluation. We find these plans to be very much a model in all respects, except that they do not address ecoregional conservation of biodiversity. They clearly articulate the MDC's overriding goal of water quality protection, and present an objective assessment of three distinct forest management options. "Active management for water quality protection" is the preferred strategy; a more aggressive approach that would enhance water yield, as well as a "hands-off" approach that would eliminate commercial forestry, were both rejected as being too much at risk from catastrophic hurricane damage.

The chosen strategy is fully described and supported, based on an especially thorough review of the literature on how forest management affects water quality. The strategy is appropriately characterized as a working hypothesis, which is continually examined by routine monitoring. The plans have been developed by an open public input process involving both technical and citizen advisory groups. Management planning and operations are well supported by good cover type maps and spatial data handling capability, implemented through a fully functional in-house GIS and associated database.

DFW

Unlike MDC with their concentrated, geographically confined ownerships, DFW does not have a single, umbrella plan for their 116 Wildlife Management Areas (WMAs)

scattered throughout the Commonwealth. Detailed “Site Plans” are prepared for specific WMAs before any forest management activities are conducted. Site plans describe the ecological characteristics of the WMA, relate its vegetation structure and that of surrounding lands to the overall DFW goal, create a set of site-specific objectives, outline initial and long-term vegetation management actions, and discuss monitoring of activities. Maps indicate any proposed harvests by cover types, seral stages, and natural heritage sites. DFW also has proposed to develop ecoregion-level plans that would group the WMAs into approximately 20 management units, with one or two units within each of the 12 EPA ecoregions that contain DFW lands, but none of these has been completed.

DFW’s general forest management practices are covered in the document *Forest Management Guidelines for WMAs* (Dec. 2000 Draft), referenced above in our evaluation of Elements A1 and A2. This 34-page document establishes a strong scientific underpinning and focus for DFW’s approach, based on an excellent synthesis of literally hundreds of contemporary references to the published literature on managing forests for biodiversity. DFW recently acquired cover type maps for all WMAs as well as surrounding landscapes via an outside contract, which have been digitized and made available in the form of a GIS to DFW staff. Unlike MDC and DEM, DFW has no timber inventory information on the mapped strata, but plans to acquire such data via contract funded from the recently authorized bond monies.

DEM

Documentation supporting DEM’s forest management activities can be found primarily in the 1980 and 1992 *Generic Environmental Impact Statements* (GEIRs) on Forestland Management Practices, as well as numerous individual memoranda on various relevant topics. Although these documents outline DEMs policies for state forest management in many respects and provide general background information, they provide no detail about any particular forest or DEM District. According to the GEIR, such site-specific data are supposed to be covered by the Massachusetts GOALS (Guidelines for Operations and Land Stewardship) planning process. Yet, it appears that GOALS plans do not exist for most State Forests. Review of those that have been completed reveals that the GOALS plans are focused almost entirely on the State Park system and the various issues surrounding public use of Park properties. For example, the GOALS plan for the Northeastern Connecticut Valley Region (May 1997) barely mentions the included State Forests (Wendell, Erving, Mt Grace, Warwick, Royalton, Lawton, Otter River, Templeton, Hubbardson, Petersham, Riceville Pond, and Shutesbury) and does not provide any specifics about timber management practices or resource management activities on these properties, many of which we observed in the field evaluation.

In a white-paper entitled *A Report on the Massachusetts Bureau of Forestry’s 5-year Strategic Planning Process – Interim Report* (June 2002), DEM states: “Information from the current CFI will be used to develop landscape level (District) plans in 2002.” No such plans, or even rough drafts of them, were provided to the evaluation team in July-August 2002. Finally, we note a reference to the DEM’s “Focus Forests” program, a proposal to establish a “model” forest in each District that will serve as a location for

outreach activities involving forest management of large properties. In the field audit, we found no evidence that this program had progressed beyond the proposal stage.

DEM has excellent current information on their timber resource as a result of the recent remeasurement of 1400 CFI plots established in the 1960s, which has just recently been compiled. Foresters apparently have relatively up-to-date aerial photos and do prepare maps for individual timber sales while making silvicultural prescriptions. These individual timber sale maps and management prescriptions are based on data acquired using variable radius plots and analyzed using SILVAH. Yet, spatial data such as forest cover type maps or a modern GIS appear to be almost entirely lacking for the State Forest system. DEM lacks forest cover type maps for the majority of its forests. As a consequence, the DEM is wholly unable to conduct analyses of forest structure, or devise site-specific management plans based on a documented landscape context, for any of its properties.

April 2003 Update: Since the time of the field assessment, DEM has taken steps to acquire forest type mapping in GIS via contract (same methodology used by DFW) funded by the recently authorized environmental bond.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- For reasons detailed above, the MDC's completed plans for Quabbin and Wachusett meets the SCS criteria under Element A.6 and Principles 7 and 8 of the Interim Standard.
- DFW site plans and supporting policy documents address most of the elements of a certifiable management plan; this agency is particularly strong in monitoring biodiversity aspects of forest management activities.
- DFW routinely employs intensive pre-harvest biodiversity monitoring, which in one case located a rare orchid that would probably not have been detected otherwise.

Observations and Concerns

- MDC's plans for the Ware River and Sudbury Watersheds remain in draft form; these must be completed in a timely fashion.
- Although DFW has excellent current forest cover type data, the WMAs have no comprehensive timber inventory information and thus cannot engage in any forest management planning involving future harvest volumes and revenues.

In the team's judgment, DEM effectively has no management plans in place for lands where active timber sales have been conducted. ***This constitutes a fatal-flaw violation of***

FSC Principle 7 that prevents this agency from becoming certified until the associated Precondition is met.

Pre-condition DEM 2002.1: Prior to award of certification, DEM must complete the following stages of management planning:

1. Initiate a planning process⁷ that when completed will constitute landscape-level plans for all DEM properties across the state. In order to move this planning pre-condition to a condition DEM needs to:
 - a) Define the geographic areas or regions that will form the basis of landscape-level plans, ideally, this step would involve all agencies (not just DEM) who can then use this as a common ecological framework.
 - b) Commit to and provide a timeline to complete forest typing and mapping on all DEM forest- lands (we strongly recommend having this contracted, following the approach used by DFW).
 - c) Develop and implement a strategy to perform long-term resource allocation analysis and allowable cut calculations using an area-based model with yield curves derived from CFI data and other credible sources that account for the imbalanced age structure of the present forest and the evolving silvicultural systems being employed or contemplated.
 - d) Develop and implement a strategy to seek and incorporate credible public input in developing landscape-level and site-level plans.
2. Develop a management plan for one of the areas/regions defined in step 1 as well as a site plan for one of the forests (or other appropriate geographic unit) within that area/region. Development of these plans must include a credible public input process, and the end product must address all requirements under FSC Principle 7 and FSC criteria 4.4, 9.1, and 9.3.

April 2003 Update: Since this report was issued in November of 2002 the State has changed administrations (governor and Secretary of Environmental Affairs). Despite this change and the continued economic downturn EOE has remained committed in capital spending plans for major investment to meet pre-conditions and conditions outlined in this report. This investment is supported by several of the statewide conservation organizations. The planned investment on the capital spending plans for DEM and DFW over the current and next three fiscal years totals over \$1.2 million for projects to meet SCS's draft conditions and pre-conditions. In addition to this commitment, DEM has agreed to transfer two full time staff (one forest planner and one GIS analyst) to work on completing forest plans and to oversee DEM's capital contracts. Currently, both DEM and DFW have contracts close to being awarded for these purposes.

⁷ We recommend this be an ecoregional planning process, where ecoregions are defined that form the basis of the landscape-level plans.

April 2004 Update: Pre-condition Part 1 and 2 have been met, as summarized below. Pre-condition is closed.

Part 1

- a) Landscape Eco-regions have been developed cooperatively (Forest Service, Natural Heritage and Endangered Species Program, adjacent states, MA agencies) for all agencies. The ecoregions are listed in Table 9.A.5 and are described further in the LWP Ecoregion Plan available from <http://www.state.ma.us/envir/forest/default.htm>.***

Table 9.A.5.

Ecoregion Name	Acres	Sq. Miles	% of Total
Berkshire Vermont Upland	433,947	678.0	8.4%
Boston Basin	204,159	319.0	3.9%
Cape Cod Coastal Lowlands and Islands	517,630	808.8	10.0%
Connecticut River Valley	339,597	530.6	6.6%
Gulf of Maine Coastal Lowland	186,748	291.8	3.6%
Gulf of Maine Coastal Plain	1,024,304	1,600.5	19.8%
Hudson Highlands	304,918	476.4	5.9%
Lower Worcester Plateau	681,631	1,065.0	13.2%
Narragansett Bristol Lowland and Islands	586,547	916.5	11.3%
Southeast NE Hills and Plains	233,904	365.5	4.5%
Southern Green Mountains	20,500	32.0	0.4%
Taconic Mountains	236,067	368.9	4.6%
Vermont Piedmont	138,573	216.5	2.7%
Worcester Monadnock Plateau	270,438	422.6	5.2%
Total	5,178,963	8,092.1	100.0%

- b) DCR: Bureau of Forestry: A contract has been executed with James Sewell for forest typing, mapping, and interpretation of all DCR-Bureau of Forestry lands. Contract is 75% completed and the deliverables are expected by October 2004.***
- c) DCR: Bureau of Forestry: A strategy to meet this pre-condition has been developed. Funding has been secured for a contract with a mensurationist to document a proposed methodology to meet the conditions of certification. Conceptual methodology for long-term resource allocation analysis and allowable cut calculations have been discussed and agreed upon. The contract is anticipated to be executed by May 2004 and a proposed strategy developed by December 2004.***
- d) Credible level of public input is being sought at both the landscape and site level planning processes. The State Forest Management Planning has developed a public involvement strategy that includes Tribes; environmental, social and other non-governmental organizations; universities; industry; federal, state, and local government; individuals; media; and others. Details regarding the public input process are available in the LWP ecoregion plan at <http://www.state.ma.us/envir/forest/default.htm>.***

Part 2

The LWP Ecoregion plan and the Federation of Women's Clubs State Forest Land and Resource Management Plan have been prepared. These plans will serve as the model for State Forest Planning process, framework, goals, desired conditions, objectives, standards, and strategies. Together the plans fully conform with the breadth of the following relevant FSC Criteria, as elaborated in the Northeast Regional Standard: 4.4, 7.1-7.4, 9.1, and 9.3.

Pre-Condition DEM 2002.2: Prior to award of certification, DEM must demonstrate it has addressed the leadership gap created by the recent vacancy of Chief Forester. Ideally, a Chief Forester would be hired based on a national search and an aggressive effort to recruit candidates of high professional stature with demonstrated leadership talents.

April 2004 Update: Jim Dimaio Chief Forester was appointed September 28, 2003

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
78	82	92

Condition DEM/DFW 2001.1: Within 5 years of award of certification, DEM and DFW must complete regional and site-level management plans for all properties. For properties acquired in the last 12 months and for future acquisitions, management plans must be developed within 2 years of the date of acquisition. For details and recommended guidance, see Pre-condition 2002.1 and Appendix A.

Condition DEM/DFW/MDC 2002.6: As new management plans are completed and existing plans are updated (see Pre-condition DEM 2002.1 and Condition DEM/DFW 2002.1), agencies must modify and augment their existing public summaries. One single master plan for each agency that includes site level details is sufficient to meet this condition. Public summaries must be done in accordance with requirements under FSC Principle 7 and criterion 8.2 and be readily available to the public, e.g., post on EOEA web site.

Condition DEM/DFW 2002.7: Within 2 years of award of certification, DEM and DFW must designate and delineate HCVF areas and develop a plan for management of these areas. Reference HCVF Tool Kit recently prepared by the FSC.

Appendix to Conditions/Recommendation 2002.2- Suggested Guidance on Specific Components of and Methods for Management Planning

- Define the ecoregions that will form the basis of landscape-level plans, across all agencies, following the vision proposed by DFW. Should be a consensus not only

of the agencies, but also leading ecologists and forest scientists, in the state and region.

- Delineate “sites” (e.g., specific forests or units of land) that will be the geographic focus of individual, local plans – these could, and probably should, span agency boundaries, simply to facilitate the work. DEM Districts (35,000 acres) seem too large for this, separate plans for hundreds of small, scattered parcels, is impractical.
- Define the geographic scale at which the forest(s) will be regulated (in terms of allowable cut calculations, either by area or volume) – this could be either of the above, or a different, intermediate scale such as a DEM district.
- Implement forest typing and mapping on all DEM Forests, consistent with DFW and/or MDC, to enable cross-agency planning.
- It would be highly beneficial if the agencies worked together to develop a common GIS database that is consistent with standards established by MassGIS.
- Select an analytical platform to perform a long-term resource analysis of various management options (e.g., LMS for landscape, FVS for a stand simulator) and use it to choose a specific alternative after credible public input. Can be contracted, though some should be done “in-house.” The planned management activities should be spatially explicit for at least 10 years, and generally identified for at least one rotation 60-100 years. Although the plan could be defined in terms of areas treated (perhaps a plus), there should be reasonable estimates of timber volumes to allow budgeting of future revenues.
- Establish and conduct a credible public input process on management policies and practices, both at the ecoregional and site levels. Both NGOs and average citizens/constituents need to weigh in here. Solicitation of comments can begin before draft plans are developed but some level of consultation should occur once draft plans are available.
- Incorporate identification and protection of historic and pre-historic cultural sites into the management planning process
- Delineate both reserves and HCVFs, as well as other management zones, on all DEM/DFW lands as part of the planning process.

A.7. Importance Weighted Aggregate Score For Program Element A

Employing the PAIRWISE algorithm (described in the Forest Conservation Program Operations Manual), the evaluation team assigned weights of relative importance for each of the 6 criteria in this program element. Under SCS’ accredited protocols, assignment of

weights of relative importance is one means by which certification evaluations recognize and incorporate regional and sub-regional circumstances. In this case, the weights were designed to reflect the regional context in which the subject forest management unit is located: public reserved forestland in the Commonwealth of Massachusetts. It should be noted that the assignment of weights of relative importance takes place independent of the performance evaluation. In fact, the weights of relative importance are assigned prior to the field investigations.

Criterion	Normalized Weight of Relative Importance
A1	0.28
A2	0.22
A3	0.11
A4	0.05
A5	0.07
A6	0.26

Applying these normalized weights to the 6 assigned performance scores (presented and discussed above) leads to a single weighted average score for the program element:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
<i>82</i>	<i>87</i>	<i>93</i>

In that this weighted average score for DEM, DFW, and MDC exceeds the threshold of 80 points, overall performance with respect to this program element (timber resource sustainability) is judged to be exemplary and certifiable. Provided that the weighted average scores for the other two program elements exceed 80 points, DEM, DFW and MDC forestlands merit conditioned certification under the SCS protocols, as accredited by the Forest Stewardship Council.

9.1(B). OBSERVATIONS AND CONCLUSIONS REGARDING PROGRAM ELEMENT B: ECOSYSTEM MAINTENANCE

This program element is concerned with the extent to which natural forest ecosystems indigenous to the ownership are adversely impacted during the process of managing and harvesting timber products. Sustainable forestry operations incorporate consideration of non-timber components of the forest ecosystem into management programs and practices, and seek to minimize alteration of natural ecosystem conditions and processes.

Performance indicators address maintenance of ecological functions (regeneration, succession, genetics, and natural cycles of forest growth); protection of watersheds, aquatic life, wildlife, rare species and communities; reservation of representative samples of ecosystems; use and management of exotic species; and proper consideration of chemicals and biological control agents.

Consistent with SCS Forest Conservation Program protocols, the Evaluation Team employed six criteria to assess forest ecosystem maintenance. These criteria conform with nine elements of Principle 6 and one element of Principle 5 of the *FSC Draft Interim Standards for State Forestlands in Massachusetts*.

B.1. Forest Community Structure and Composition

To maintain all elements of a natural forest ecosystem, the full range of seral stages from early regeneration to old growth, both in acreage and geographic dispersion, is desirable. Ecosystem maintenance also requires that the full range of tree and other vegetative species associated with the natural forest is maintained in self-sustaining proportions within the working forest. The diversity of stand sizes and configurations is another fundamental measure of ecological diversity.

An ideal score for this criterion would require the following: (1) management actions lead to optimal distribution of seral stages, in acreage and distribution; (2) species and habitats are similar to pre-settlement conditions or are being restored to such conditions; (3) stands are managed with an ecological landscape perspective; (4) stand diversity is designed to avoid fragmentation caused by a preponderance of uniform-sized stands; (5) structural diversity is maximized at the stand level; (6) exotic species are carefully avoided or controlled; and (7) snags, granary trees, and other legacies are retained within harvest units.

MDC

From the *Quabbin Watershed Land Management Plan* (1995, page 32), the goals for forest management are to provide a vigorous forest cover, diverse in species composition and tree sizes, and maintain a forest cover that balances active growth...and active regeneration. MDC's Division of Watershed Management also states as a major goal the prevention of erosion of sediments and nutrients from the forest. Explicitly (page 33) the plan states, "In order to retain forest cover through the variety of disturbances that affect that cover, it is a Division goal to expediently re-establish and retain adequate forest

regeneration across the watershed....it is a prudent goal to steadily maintain well-distributed reproduction so that the forest is capable of quickly recovering from disturbance. In simple terms, the understory represents a “reserve forest,” a back-up to cover the eventuality of overstory losses.” This policy also applied to MDC forest property in the Wachusett and Ware River watersheds.

In the *QLMP*, the Division considered three approaches for managing species and age diversity and chose the alternative for active forest management to protect water quality. The essence of this alternative is to create a forest composed of 33% 0-30-year-old understory, 33% 30-60-year-old midstory, and 33% older trees. Additional areas of the forest will be maintained with “special management restrictions.” The *Wachusett Reservoir Watershed Land Management Plan* (2001) followed the lead of *QLMP* in prescribing that a predominately two-aged forest would be converted to a three-aged forest in approximately equal proportions. The plan also states, “It is the primary goal of forest management in the Wachusett forest to encourage the development of stands of trees comprised of species well suited to the site.” Likewise, the draft *Ware River Land Management Plan* defines three strategies for land management, with about 30% of area in each. Only Strategy 2 and 3 lands will be actively managed, regenerating about 1% of the area each year.

MDC foresters maintain both CFI and GIS databases of their properties, and thus have the ability to display age and stand types in a spatial context that allows for planning and management of forest stand structure across the landscape. The evaluation team heard repeatedly from MDC foresters that their chief goal in managing their forest is to provide diverse structure and age class distribution, and this is the option that was chosen to best assure water quality in the watershed. It was clear from our site visits, that they are achieving this goal, and doing so in a way that is consistent with the ecology of the landscape, consideration of natural processes, and pre-settlement forest conditions. MDC forestlands, the Quabbin watershed in particular, have been mapped in a way that shows vulnerability to hurricanes—common occurrences in Massachusetts—and are being managed to reduce potential damage by future hurricanes. The essence of this management is to maintain a mix of stand types and age classes, especially in areas most vulnerable to such disturbances. They have not specifically addressed High Conservation Value Forests, however, especially the contribution that MDC forests can make to regional conservation (HCV2 forests—see *Section A6*, this report). HCV4 forests are integral to MDC management; they just have not been addressed in this context.

Spatial diversity among stands being managed is obviously being considered as foresters plan harvests. Their major silvicultural approach is to mark patch cuts within forest stands. Some of the small patches are effectively complete overstory removals with ample regeneration, but most patches that have been harvested show significant retention of canopy trees and legacy trees. At least on the Wachusett forests, and hopefully in the other watersheds, the GIS system is used effectively to display sizes and configurations of patch cuts, and allows them to plan for the next rotation (30 years) when they will return to the same stands for overstory removal of a different cohort of patches. We

observed ample advanced reproduction in areas that were being harvested and in those where logging had taken place in recent years.

Forest management planning for MDC lands demonstrates a management alternative that is helping to restore diversity throughout the landscape by accelerating diversity in species and age composition at the stand level. Harvesting is distributed in small patches, varying in size and shape not unlike what might be created by small-scale natural disturbances. Thus, management for stand and landscape diversity is not fragmenting the forest by isolating residual stands of older trees. Finally, because MDC is chiefly concerned about water quality, their foresters are quite aware of the importance of an appropriate understory, one that they consider the “reserve” forest.

MDC foresters impressed us with their knowledge of site conditions and determination to encourage appropriate forest communities on each site. They also are well schooled on the subject of invasive plants, and can demonstrate experience and expertise in dealing with exotic species. The *QLMP* (pages 125-131) and the *WLMP* (pages 158-168) describe conservation management practices for wildlife that are well researched and quite specific. MDC management plans adequately address important issues of biodiversity, by identifying species of concern within their watersheds and prescribing special management practices. The *WLMP* (2001) is quite explicit in this regard.

DFW

Foresters in the Department of Fisheries and Wildlife have an explicit responsibility for assuring habitat diversity across the forestlands they manage. They have clearly addressed goals for composition or forest cover types and age distribution within management districts, sub-basins, and the Commonwealth (*Forest Management Guidelines for Wildlife Management Areas*, 2000, pages 4, 17). Data from a recent land-cover mapping project allow them to plan for the spatial distribution of age and cover types (*FMG*, pages 8-9, 10-23). Examination of site plans and field visits by the evaluation team confirmed that they are addressing the landscape component of their management. DFW’s land-cover mapping project also delineated non-forest types and included a 0.5-mile buffer around each WMA that was mapped and is considered when setting compositional targets for each ownership. This is an excellent procedure and one that should be adopted by other agencies and landowners.

DFW foresters have a functional GIS database, which includes an inventory of “1830s forest lands.” Where these lands are still forested, and it can be determined that they have remained in forest since the 1830’s (even though they have been harvested), DFW avoids harvest, thereby encouraging the development of old-growth characteristics on sites that have not been heavily disturbed by humans. Although they did not submit this practice as evidence of planning for High Conservation Value Forests, it is clear that they are doing so, especially HCV2 and HCV6 forests. DFW’s policies on biodiversity maintenance are well articulated in *FMG* (pages 6-15). These address the importance of large forest tracts, natural disturbances, effects of forest pests, mast, species and age diversity of forests, importance of forest reserves, and appropriate harvest practices.

As stewards of lands managed primarily to benefit wildlife, DFW foresters also adhere to policies designed to promote within-stand diversity. Policies relating to maintenance of structure are well articulated in the *FMG* (pages 18-23), including checklists for developing site plans and guidelines for aggregate retention cuts.

The only significant weakness we observed in forest management planning by DFW foresters was the lack of a systematic or stand-based inventory. Although they now have a useful spatially related inventory of stand types, they do not have the more detailed data that will allow calculation of annual growth increments and refined management for sustainable volumes. We were told that an inventory of this nature would be done as soon as budgets and personnel allow.

DEM

The history of land acquisition that has led to the current ownership of State Forests and Parks is such that much of this ownership is 60-80-year-old forest that resulted from planting programs and land abandonment of agricultural lands in the early 1900s. Plantations of red and white pine are common, as are stands of even-aged hardwoods, often mixed with softwoods. There are, however, many pockets of older forest that survived the era of land clearing for agriculture and natural disturbances in the past 150 years.

It is a stated goal of DEM (*State Forest Management Policies*, 1995) to restore these forestlands to a mix of species and age classes that is similar to pre-settlement forests, and it was common during field visits to detect that management foresters are aware of this goal. We observed pine plantations, for instance, where overstory removal harvesting was being done to encourage a desirable shift in species composition. However, there was scanty evidence of success in altering the balance of age structure across forest stands. DEMs *Silvicultural Prescription Guidelines* (2001) and *Silvicultural Prescription Policy* (#464) direct management foresters to follow very traditional silvicultural practices based on stand-level, rather than landscape-level, measures of stocking (*Section AI*, this report). The Department has a policy (#460) that directs the preservation of existing old-growth stands and preparation of site-specific plans for each of these areas. We saw no evidence of such site-specific planning. We did visit sites that were conspicuously omitted from harvesting because of their potential to assume true old-growth characteristics, but we also saw instances where clusters of defective, old trees were marked for harvest when they should have been left as legacies. Such discrepancies further illustrated the need for planning. It is our understanding that some progress is being made toward this need as contractors and volunteers are surveying many State Forests and Parks for old-growth stands.

Management foresters also seemed sufficiently aware of the importance of creating or maintaining structural diversity within stands as they prescribed and conducted harvesting operations. The evaluation team visited a high percentage of harvest operations conducted within the last 5 years, and observed an adequate effort to retain

cavity trees for wildlife, legacies of an older forest, and woody debris on the forest floor. We observed practices implemented to convert stands of Norway spruce to native species, and a widespread awareness of invasive exotics in the understory and along forest roads.

The current state of tree species and age diversity across lands managed by the Department is largely a product of a slow-paced schedule of harvesting, however. Given, the small percentage of land area that has been harvested in recent years, and the predominance of a middle-aged forest, it would be difficult not to contribute to increased diversity of species and age classes. Management foresters have recently completed a comprehensive update to the CFI database. These data allow them to derive statistics that describe age and composition of the forest in each ownership and to combine data for management districts or ecoregions, but they do not yet have the capacity to relate these data to stands or other landscape units and evaluate the spatial configuration of stand types and ages. This is a significant weakness. Until, they can develop a spatially explicit management plan for each ownership, it is just as well that their harvesting schedules have lagged.

We found a similar assessment in the *Interim Report on the 5-Year Strategic Planning Process* (2002). The Technical Working Group offered the following (page 33): “Management needs to progress on the ground...At the same time a planning process has to occur...The Program must first clearly define the functions and desired future conditions of the lands it manages...It is hard to determine what these lands should be managed for without knowing the context of what other land management agency goals are....To provide goods and services needed, must have CFI data, vegetation maps, ecological types and ownership.” This directive might also be considered to address the need for identifying High Conservation Value Forests, especially HCV2 forests, and important component of ecoregionally based management plans (*Section A6*, this report).

State Forest Management Policies (1995) was cited as evidence for DEM policy on several criteria for evaluating criterion B1. We found this to be a very sparse document that outlines different zones on State Forests and Parks; the Resource Management Zone is the most relevant. Although a number of policies are presented that relate to this criterion, most are unacceptably vague and provide little practical guidance to Management Foresters.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- Foresters in all three agencies are very aware of the significance of land-use history and of natural disturbances in determining the condition of today’s forest composition and structure.
- Foresters in all three agencies are sensitive to the importance of site conditions and threats of non-native species when developing prescriptions for management.

- MDC and DFW have mandates for management that are inherently compatible with landscape-level management for diversity.
- MDC's forest management planning is well researched and thoroughly developed, and can serve as a model for the other two agencies.
- In assessing their ownership for High Conservation Value Forest, DFW makes effective use of a unique spatial database of 1830s forest lands to identify lands that have remained in forest for more than 170 years.
- There were no observed instances of harvest prescriptions intentionally reducing diversity or composition for the sake of efficient timber production.

Observations and Concerns

- Both DEM and DFW lack some of the data that is desirable for landscape-level planning. DEM's deficiency is most significant, because they are unable to display their compositional data in a way that allows them to develop spatially referenced site plans. DFW could do more efficient forest harvest management if they had better inventory data.
- DEM has a set of very general goals that prescribes their management for diversity. The current goal statements provide no references, no evidence of a recent (since 1992) literature review (such as MDC and DFW management plans) and no objective standards.
- The spatial database of 1830s forest lands that was used so effectively by DFW to identify potential High Conservation Value Forests, and also by MDC for identifying "primary forests," has not been employed in a similar manner by DEM.
- All three agencies need to work together, and with others, to better establish goals and targets for landscape diversity. Consideration of BioMap recommendations, guidelines for identifying High Conservation Value Forests, and TNC's ecoregional plans would be appropriate.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
82	92	95

There are no conditions or recommendations for this criterion

B.2. Long-Term Ecological Productivity

Forest management activities should not impair the ability of the forest, over time, to sustain key biological components and ecological functions. Long rotations, retention of both green trees and dead woody material, minimal soil damage during harvesting, avoidance of whole-tree logging, and avoidance of excessive exposure of soil to harsh micro-climate are indicators of sustainable management.

An ideal score for this criterion would require the following: (1) biotic and abiotic factors are managed to result in self-sustaining natural forest ecosystems; (2) ecological rotations are promoted rather than biologically pre-mature rotations; (3) even-aged silviculture is used only when it mimics natural stand regeneration patterns; and (4) in all-aged systems, trees are included that have reached biological maturity.

MDC

As an agency whose prime objective is water quality management, it was expected that MDC policies and practices for protection of soils and retention of nutrients would be well developed and implemented. The *Wachusett Land Management Plan* has a substantial section, "Conservation Management Practices for Watershed Management" that provides policies and practices for protecting soils. The WLMP (pages 105-108) also presents guidelines for equipment used in harvest operations and a detailed description of different logging equipment and their suitability for different types of harvest. Their policy on this criterion is that "MDC specifies equipment requirements for each site in its bidding contract." Additional evidence was noted in several forest cutting plans: (1) MDC Lot 278A, "Forwarder required to transport logs;" Lot 858, "...the forwarder road will be located within the filter strips of the reservoir, but not for long distances;" MDC Lot 3034, "This operation is restricted to C.T.L. [cut to length] fixed head processors. Forwarders are restricted to a minimum of three axles with tracks available."

Regarding site suitability, the *WLMP* (page 94) states, "It is the primary goal of forest management in the Wachusett forest to encourage the development of stands of trees comprised of species well suited to the site." It was clear from our site visits that management foresters are very aware of site variability and seek to manage for the appropriate stand type on all MDC forestlands.

Again, because MDC's primary mandate is to manage for water quality, we saw retention of both live and dead residual trees that was exemplary. There is no clear-cutting or whole tree harvesting, and managers are leaving substantial amounts of harvest areas to mature beyond commercial maturity.

DFW

The *Forest Management Guidelines* (2000) address the importance of determining soils for each timber sale area (page 20, 24-25) and establishing special restrictions for each site. It was obvious from logging contracts that equipment specifications are common. For example, the contract for harvesting on the Winamissett WMA: "Cutting only during dry, frozen, or otherwise stable conditions. Either a feller-buncher or directional felling will be used to minimize impacts to wetland area. Any directionally-felled trees will be winched from designated skid roads." On the Herm Covey WMA, restrictions indicated, "this operation requires a forwarder." Forwarders were used on seven (and required on four) of nine harvests in past 3 years.

Site productivity also is factored into stand prescriptions on WMAs. The importance of site is well described in *FMG* for active and passive management. Site productivity is

assessed through the Prime Forestlands maps for Mass, which have five productivity classes.

DFW is prohibited, by state statute, from clear-cutting. Most of their forest management is directed toward creating a structurally diverse forest with increasing rotation ages. In doing so, Department foresters are attempting to increase the amount of young age classes by favoring advance regeneration of desirable species. Their plans also stress the importance of increasing the extent of late-seral age classes. Although considerable canopy may be removed to promote the young age-classes, clusters of live trees are routinely retained and abundant debris is evident on the ground. Visits to High Ridge and Fox Den WMAs illustrated the implementation of these objectives.

DEM

DEM's forest product sales contracts have a "mud season" clause that specifies the dates of 1 March—15 May as the period when logging is prohibited unless soil conditions permit. The standard contract for harvest sales provides that, "types and sizes of equipment subject to approval by the Forester. Additional conditions may be found in the special provisions section of this contract." Guidelines on equipment usage are developed on a case-by-case basis, and we observed several examples of sales contracts where equipment was specified. For example, the Wendell SF contract stated, "The lot covered by this contract is best suited for harvesting by manual chainsaw felling techniques and the use of a traditional rubber wheeled cable skidder. Any rubber tired harvesting equipment must be equipped with tire chains. No tree length skidding will be allowed. A forwarder must be used to transport pre-bunched logs from the main skid roads to the designated landings." Another example, an October Mountain spruce sale, marked for cutting had a contract provision that said, "Mechanized equipment and a forwarder will definitely be required on this lot."

Field inspections demonstrated consistent consideration of site potential by management foresters in developing prescriptions, and an appreciation of the potential for excessive disturbance of soil microorganisms by overly frequent harvests or excessive use of equipment. The *Armellaria* sp. root fungus, a problem in many spruce stands, is one such example.

Even-aged stands are common on State Forests and Parks, but current management strives to convert these stands, mostly through overstory removal cuts, to all-aged stands. Whole-tree harvesting is not taking place on DEM lands (*Section A4*, this report). Instead, we saw, repeatedly, evidence of substantial retention of green trees and woody debris on harvest sites. Regarding biological maturity, most of the management foresters who showed us field sites seemed to appreciate the value of old-aged trees, whether in managed stands or in protected areas, although the lack of detailed site planning made this criterion difficult to evaluate objectively.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- All three agencies demonstrate exemplary forest management practices, as they affect long-term ecological productivity. Each agency has an appropriate policy that recognizes the importance of soil conservation and nutrient retention.
- All agencies apply specific conditions to equipment used in harvesting, and all have “wet soil” and “mud season” restrictions that are imposed in sales contracts and by management foresters.
- State-of-the-art logging equipment, designed to reduce impacts on site quality, is used commonly on lands managed by all three agencies.
- Chapter 132, the Forest Practices Act, regulates harvesting activities that occur in or near wetlands, streams, or on steep slopes

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
95	95	95

There are no conditions or recommendations for this criterion

B.3. Wildlife Management Actions, Strategies, and Programs

Wildlife species are important indicators of the overall health of forest ecosystems. Thus, the evaluation includes a focus on policies and programs for wildlife management and the extent to which wildlife and wildlife habitats are considered, protected, and enhanced during the course of timber management operations. Field and management indicators included: regular involvement of wildlife expertise in the forest management program; use of data concerning wildlife populations, habitat conditions, and species requirements; integration of wildlife concerns into management prescriptions; retention of desirable habitat features, such as hard and soft mast, cavity trees, downed woody debris, and diverse cover.

An ideal score for this criterion would require the following: (1) funding and staff committed to acquisition and use of data related to wildlife and commensurate with timber information database; (2) full integration of wildlife expertise within the organization; (3) timber management that routinely incorporates wildlife management; (4) strategies for assuring conservation of rare, threatened, and endangered species.

MDC

The *Wachusett Land Management Plan* (pages 130-183) provides lists of rare, threatened, and endangered species (plants and animals); discusses invasive plants and their management; describes maintenance of early successional habitat for wildlife; provides specific descriptions of negative impacts from wildlife of different silvicultural

prescriptions; and details a number of Conservation Management Practices for wildlife management: vernal pools, seeps, orchards, deer winter areas, mast, den and snag trees, downed woody material, and woodland raptor nests. The older *Quabbin Watershed Land Management Plan* (1995) provides less detail on wildlife management, but the newer WLMP reflects policies of MDC for all land management.

MDC has a staff wildlife biologist who is actively engaged in numerous wildlife management issues, and also reviews all forest harvesting plans. He often makes visits to proposed harvest sites as part of the review. The evaluation team was consistently impressed with the interest in wildlife and other elements of biodiversity demonstrated by MDC foresters, and their knowledge of these issues.

Controlling numbers of deer in the Quabbin Reservation is a celebrated case of wildlife management (*White-tailed Deer Impact Management Program, Results and Evaluation*, 1991-1996). When established in the 1930s, the Quabbin Reservation was closed to the public, which prevented most hunting and trapping. By the 1980s, the deer population was estimated to exceed 50 per square mile. Effects of over-browsing on regeneration of desirable forest species were drastic, and invasive species were becoming dominant in the understory. A successful program of hunting was instituted in 1991, despite much public opposition to deer hunting in this “reserve,” and effects on the forest understory have been dramatic (*Quabbin Regeneration Summary Report*, 1997), greatly facilitating successful silviculture.

Visits to MDC forest harvesting sites demonstrated consideration of wildlife habitat. We observed buffers around vernal pools, and even heard one forester describe his effort to increase the volume of woody debris near a vernal pool by moving debris from a nearby site. Snags and cavity trees were retained in nearly all of the patch cuts. Ample downed woody debris was left on sites, consistent with management for water quality.

In planning forest cutting, MDC personnel consult the atlas of rare species and communities that is maintained by the Natural Heritage and Endangered Species Program. We reviewed several cutting plans where NHESP reviews had imposed restrictions on logging plans and operations. Examples are (1) Lot 778: review of forest cutting plan by NHESP and alteration of proposed harvest because of new nesting site by Bald Eagles on Prescott Peninsula; (2) Lot 4295—vernal pool marked on sketch map for harvesting and MDC vernal pool harvest guidelines attached; and (3) other lots in the Wachusett watershed illustrated the review of proposed cutting plans by MDC’s wildlife biologist and by NHESP. Heritage elements included a potential snake hibernacula, a series of vernal pools, habitat for Blanding’s turtle, and nesting loons and bald eagles.

DFW

The Division of Fisheries and Wildlife has statutory responsibilities for protecting fauna and flora, and they do so through management of forestlands within a biodiversity framework. The *Forest Management Guidelines for Wildlife Management Areas* (2000)

provides policies and guidance based on a thorough review of literature. Management is not directed toward single species, as it might have been in the past, except for habitat that supports rare plants and animals, priority natural communities, primary forest (1830's map), and all wetland resources. A list of priority species, communities, and habitats mapped by Natural Heritage and Endangered Species Program was provided to the evaluation team.

When planning forest harvests, DFW consults in advance with NHESP, and other wildlife and fisheries biologists in the Division. They also have established a practice of contracting for biodiversity surveys in stands slated for harvesting and, on some WMAs, for periodic resurveys.

All or almost all site management plans submitted provided clear examples of how management was intended to benefit wildlife. At least two proposed harvests were delayed or altered because of rare species, the round-leaved orchid on Peru WMA and two species of turtles on the Herm Covey WMA. The orchid was discovered during biodiversity surveys contracted by DFW before implementing the harvest plan. Locations of turtles were part of the NHESP database.

As expected, our site visits on WMA demonstrated an abundance of evidence that wildlife was the primary objective of the harvesting plan. We saw special efforts to encourage reproduction of mast trees and to retain large mast-producing trees. Required buffers around wetlands and in riparian zones usually were exceeded, and sometimes left completely unharvested—a substantial sacrifice of product but a meaningful concession to wildlife habitat. Distribution of tree species and age classes is the most conspicuous management objective, and it is being met. Perhaps the only weakness in DFW's effort to manage for wildlife is that only 1014 acres of forestland have been harvested in the last five years. The three-person (now two-person) forest management staff probably cannot be expected to increase this level of harvest while maintaining a careful review of the biodiversity implications of their management.

DEM

State Forest Management Policies (1995) indicate that high priority will be given to maintaining critical wildlife habitat. Among these habitats are abandoned apple orchards, aspen stands, deer wintering areas, conifer islands in hardwood stands, abandoned agricultural lands in early successional forests, and agricultural lands. Although all of these habitat types and habitat features are important to wildlife, this policy is deficient in that it does not address rare species, nor does it include guidelines for within-stand management of habitat for wildlife. The evaluation team detected a wide range of appreciation for incorporating wildlife management into forest management as we toured among different management districts. Usually, we were accompanied by Bill Rivers, Program Supervisor for Management Forestry, whose knowledge about wildlife habitat and interest in wildlife was obvious. In several instances, it was clear that he had suggested elements of harvest plans that favored wildlife. But, not all of his staff impressed us with the same inclinations, and many did not even seem especially

interested in wildlife, rare plants, or other life in the forest. A more detailed collection of policies and practices for wildlife management and an emphasis on compiling lists of important species on State Forests and Parks might correct this inconsistency.

At full staffing, the Bureau of Forestry has 16 management foresters; current staffing, because of recent retirements, is only 13, two of whom are contract employees. All but one of these personnel, including recent retirees, were educated as foresters or forestry technicians. Only one has a graduate degree. One has a degree in wildlife biology, but his job assignment is largely the same as other management foresters. For a department of this size, with 285,000 acres of public forested land to manage, more expertise on wildlife and biodiversity should be reflected in the workforce and in work assignments.

Unfortunately, we did not detect that the lack of wildlife expertise in DEM was compensated for by cooperative relationships with other agencies in EOE, notably DFW. In fact, there were often undertones of an adversarial relationship with the Natural Heritage and Endangered Species Program of DFW. This was most obvious where there were instances of “bubbles” on maps where forest harvesting was planned. Bubbles indicate sites—and buffers around these sites-- where rare species or communities are known to occur. NHESP publishes an atlas that shows these bubbles, but the atlas does not display associated information about the bubble. Instead, the standard practice is for a management forester to submit a cutting plan for the Chapter 132 review process, which includes review by NHESP, usually resulting in a letter that identifies the element of concern and makes recommendations for appropriate consideration in the harvesting schedule. Management foresters varied in their description of this process. Some seemed to resent NHESP’s “veto” power; others appeared to have a better relationship with NHESP and reported that they often contacted NHESP in advance of filing forest cutting plans to find out what the bubbles represented and what kinds of restrictions might be appropriate. The evaluation team queried a number of stakeholders about this issue, including officials in DFW, and were convinced that DEM can and should develop a more constructive process for incorporating data from the Heritage Program into the planning process for harvests, rather than relying on restrictive covenants imposed later in the process.

Notwithstanding the concerns expressed above, we were consistently pleased with management practices for wildlife. We saw efforts on Myles Standish State Forest to use controlled burning, in cooperation with The Nature Conservancy, to encourage a succession of naturally occurring pitch pine and scrub oak communities. We also reviewed a similar plan for Manuel F. Correllus State Forest on Martha’s Vineyard. We saw a number of sites where vernal pools were considered in harvest planning (although no instances where a management forester showed us a vernal pool that he or she had discovered and mapped); we saw consistent retention of snags and cavity trees (although objective policies varied widely from district to district, for no obvious reason); we observed ample downed woody debris left on sites; we were shown numerous instances where stick nests used by raptors had been located and protected during harvesting; and we were satisfied that mast trees were routinely marked for retention. We also were

shown instances where fields were being maintained as openings and places where aspen clones were being featured.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- All three agencies demonstrated concern for wildlife species and their habitats in forest harvesting practices.
- Natural Heritage and Endangered Species Program within DFW maintains a detailed database of the locations of rare elements: species of plants and animals, natural communities, and special habitat.
- A registry of certified vernal pools is maintained.
- The Forest Practices Act, Chapter 132, requires review of forest cutting plans by NHESP to protect rare species and communities and their habitats.
- Lands managed by EOE agencies have the potential to protect a significant amount—nearly 10%--of the land area of the Commonwealth and, therefore, a substantial percentage of existing wildlife habitat.

Observations and Concerns

- DEM and NHESP personnel need to improve communications and work together in the planning stages of forest management on State Forests and Parks.
- DEM needs more consistent access to advice on wildlife management, preferably a member of the staff, or a cooperative agreement with DFW to provide such expertise.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
78	98	95

Condition DEM 2002.10: Within 1 year of award of certification, DEM needs to implement a program to train staff to recognize rare and sensitive flora and fauna and habitat features (nest trees, vernal pools, etc.) and/or to diversify the Department's staff to respond to this need. Note: In addition to improved overall management of non-timber resources this condition is intended to foster an enhanced working relationship with the Natural Heritage and Endangered Species Program.

B.4. Watercourse Management Policies and Programs

This element addresses the extent to which bio-physical functions of watercourses are protected from the adverse effects of timber harvesting and road building. The intent is to assure protection of water quality for use by humans and a diversity of other life forms.

An ideal score requires: (1) a conservation management approach that places aquatic and riparian concerns above timber harvesting; (2) protective zones of at least 50-75 feet on both sides of perennial streams; (3) similar sensitivity and protection of wetlands; and (4) maintenance of the same quality of habitat for fish and other organisms in stream and riparian zones that would be expected in undisturbed forest.

DEM, MDC, and DFW

The intent of this element is met by the Massachusetts' Forest Cutting Practices Act, Chapter 132, and the Massachusetts' Wetlands Protection Act, Chapter 131. Where forest cutting occurs near a wetland, and is subject to Chapter 132, the Forest Cutting Plan must be filed with the local Conservation Commission, and is exempt from Ch. 131, but subject to review by the local Commission. Provisions of Chapter 132 are extensive and are carried out by the requirement of a Forest Cutting Plan, which is reviewed both before and after harvest by DEM Service Foresters. The Act requires filter strips-- where no more than 50% of basal area may be cut within a 5-year period--to be left along the edges of all water bodies and Certified vernal pools. Where slopes are steep, filter strips are wider than 50 feet, and where cutting takes place in municipal watersheds and along Outstanding Resource Waters, width of filter strips expands based on slope.

Construction of roads and skid trails must be done in accordance with Massachusetts Forestry Best Management Practices Manual. Logging contractors are required to attend training sessions on BMPs as part of obtaining a Massachusetts Timber Harvest License. A licensed logger is required to be on site at all times during a harvest operation, and contracts reviewed by the evaluation team were explicit in requiring this license of operators.

MDC

MDC excels in protecting shorelines, watercourses, and wetlands. Most of their contractors are well known to the foresters and some work almost exclusively on MDC lands. The contractors know that MDC's primary mission is to protect water quality, and they demonstrate exceptional care in crossing streams and wetlands. The evaluation team observed no questionable practices during field visits on MDC lands. MDC lands have tight security, so restrictions on ATV use are more tightly monitored than on other state lands.

DFW

DFW foresters were anxious to show the evaluation team examples of stream and wetland crossings, and it was obvious that they were following guidelines for protecting water and expecting their contractors to do so as well. We also observed that filter strips left along streams and shorelines always exceeded minimum width and basal area. On the High Ridge WMA, we inspected an effort to revegetate a stream crossing with a native sedge that came from a locally produced seed source.

DEM

The evaluation team repeatedly inspected riparian areas and shorelines for filter strips and almost always found the management foresters had opted to exceed the required minimum distances. We found no violations of the required minimum compliance with Ch. 132. Foresters were thorough in describing requirements for contractors regarding construction of roads and skid trails, often requiring substantial road improvements as part of the contract. Generally, we observed appropriate practices in crossing streams and wetlands, but there were two minor instances (Otter River SF and October Mountain SF) where harvest equipment left ruts and trails within wetlands. Also, there were some examples of unacceptable roads. Most of these were older roads used for a variety of purposes within state forests or recently closed-out roads where unauthorized ATV use was creating erosion. We saw several cases where these roads represented clear violations of BMPs. Such examples represented a need for capital improvement, however, and were not indicators of poor management practices on recent harvesting operations.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- The Forest Cutting Act, Chapter 132, and the Wetlands Protection Act, Chapter 131, impose strict standards for the protection of wetland function and water quality. Compliance with and enforcement of both statutes appears to be excellent.
- Massachusetts has an excellent program of education about and protection of vernal pools. A register of Certified vernal pools is maintained by NHESP, and many citizens participate in locating vernal pools, describing their structure, and documenting indicator species.

Observations and Concerns

- The three agencies have different options for making road improvements. DEM and DFW have little capacity in operating budgets for road construction and maintenance, but both are successful in making road upgrades through forest harvesting contracts. MDC, on the other hand, maintains roads well with their own staff and equipment (although we heard that these resources were inadequate in recent years), but does not have the option of requiring road upgrades in logging contracts.
- Capital improvement plans for road construction and maintenance are needed, especially on state forests and parks.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
85	98	98

There are no conditions or recommendations for this criterion

B.5. Pesticide Use: Practices and Policies

Use of chemical pesticides is of special concern to the public, because of human health and potential effects on biodiversity through encouragement of monocultures. To many, use of chemical pesticides is fundamentally incongruent with the concept of sustainable forestry. Field and management indicators for this element will determine the frequency of pesticide use and reasons for that use; extent to which silvicultural methods minimize use of pesticides; methods and effectiveness of pesticide use; and policies and procedures for handling pesticides.

An ideal score for this element would require that (1) chemical pesticides or fertilizers are used only when absolutely necessary; and (2) silvicultural methods minimize the use of pesticides.

MDC

Insecticides and herbicides are not used on MDC lands, except where power companies are permitted to use chemicals on power line rights-of-way. Timber sale contracts used by MDC do specify stringent procedures for handling hazardous waste on site and require operators of harvesting equipment to be diligent in treating spills or leaks of hydraulic fluids and fuels. In *Section A2* (this report), it was noted that MDC might use limited applications of herbicides to combat invasive exotics. If they did so, carefully, our evaluation on this criterion would not change.

DFW

No pesticides have been used in any forest management activity on DFW lands for the past 12 years. Herbicides are being used, however, for maintenance of some upland openings and to discourage invasive exotic plants in those openings. A list of such applications for the past three years was provided, illustrating the limited use of such chemicals to about four sites per year, applied almost entirely with backpack sprayers. All applications must be by licensed personnel.

Timber sale contracts require that hazardous waste be handled in compliance with all local, state, and federal laws and that no disposal of hazardous waste is to occur on WMAs. Operators of logging machinery are required to carry and use oil-absorbent cloths to handle leaks or spills.

DEM

The evaluation team saw no examples where chemicals had been or were being used as part of a silvicultural prescription. The one use of a pesticide we did examine was on a small vista on October Mountain State Forest, where glyphosate had been sprayed on hardwood reproduction to discourage taller growing species and maintain a permanent wildlife opening and a vista.

The more common use of chemicals on state forests and parks is to control noxious plants and insects near campgrounds and other areas of concentrated human use. However, Bill

Rivers, Supervisor of Management Forestry, responded to our request for evidence by stating, "...with recent interest in controlling invasive exotic plants the use of herbicides will, no doubt, increase. Also, as the forest continues to mature, there will be more regeneration cuttings that will require vigorous efforts to restore degraded stands by securing regeneration of species that are appropriate to the site, to reduce the proportion of species susceptible to a particular pathogen of insect or to promote species having greater wildlife or economic values."

Where pesticides are used on state forests and parks, the safe use and disposal of chemicals is addressed by Draft Policy #252, *Clean State Program*, and Draft Policy #251, *Safety/Environmental Compliance Team*. Both documents describe general policies and procedures for a safe workplace that include mention of hazardous wastes. Draft Policy #473, *Use of Herbicides for Control of Unwanted Vegetation*, and Draft Policy #474, *Nuisance Insect Control*, state that any chemical applications must be done by licensed applicators.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- Silvicultural systems used by state agencies in Massachusetts do not routinely depend upon chemical pesticides for control of regeneration in forest stands. All three agencies manage for natural regeneration.
- Where chemical have been used, it appears that laws and policies adequately prescribe careful use and disposal of hazardous wastes.
- The evaluation team observed no evidence that hazardous chemicals have been misused or disposed of incorrectly.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
95	95	98

There are no conditions or recommendations for this criterion

B.6. Ecosystem Reserve Policies

An ownership committed to sustainable forestry will seek to protect areas of ecological significance as reserves or non-managed areas or by transferring ownership of key areas to other organizations. The intent of this element is to determine if managers have adequately identified areas of ecological significance and taken the appropriate steps to reserve these areas from harvesting.

An ideal score for this element would require (1) identification and mapping of ecologically significant areas within the ownership; (2) protection of such areas where they are of limited abundance within the region; (3) recognition as a regional standard

setter with regard to establishment of reserves; (4) inclusion of old growth in protected areas; and (5) reservation of >15% of forest areas.

MDC

Each of the management plans we reviewed described lands that have been reserved by MDC in the Quabbin, Ware River, and Wachusett watersheds. In 1972, the Quabbin Plan delineated 3,360 acres of “Aesthetic Areas,” and 3,200 acres of “Protection Areas.” Exceptional forests or individual trees were included. In the 1986 plan, an additional 7,600 acres were added to the “Protection Zone.” No significant changes were proposed in the more recent, 1995, plan. In sum, approximately 10,000 acres of Quabbin lands have been classified as “Areas with Special Management Restrictions”: 3,716 acres are islands; 1,712 acres are steep slopes, 2,272 acres are wetlands. Quabbin Park, 1,058 acres, and Pottapaug Natural Area, 1,183 acres, are the most significant upland areas in size. Of the 12 common forest types occurring on the Quabbin CFI plots, six are represented on CFI plots that fall within restricted areas. Most of the missing types are uncommon. Each of the five MDC soil types is represented well within the restricted areas. The Pottapaug Pond area was added to address the public interest in a block of accessible forest that was allowed to grow and change without silvicultural intervention.

In the *Draft Ware River Land Management Plan* (pages 35-41), Strategy 1 lands, where no silviculture will be conducted, are delineated. Examples are wetlands, remnant old-growth stands, areas with difficult access, aesthetic and high recreation use areas. About one-third of the MDC acreage on the Ware River watershed falls into Strategy 1. The table of Strategy 1 lands lists 5,833 acres: 2045 are wooded wetlands; 2321 are listed as upland openings, and the rest are various wetland types. This appears to be a sizeable percentage of the Ware River MDC ownership.

A recent GIS map for the Wachusett watershed identifies 3,657 acres of “unmanageable” land. Almost half of this area is comprised of wetlands. The land management plan identifies Areas with Special Management Restrictions, which, in addition to wetlands, defines several other categories, such as steep slopes, riparian areas, and islands. Poutwater Pond is a very special bog habitat, 213 acres, that has been protected as Massachusetts’s first Nature Preserve.

MDC has submitted adequate information to determine that they have reserved a substantial portion of their ownership (>15%) as natural areas or unmanaged lands. Furthermore, the silvicultural strategy employed on MDC lands assures that old forest conditions will be encouraged within managed areas of the forest. This agency is protecting a substantial amount of their ownership, and they have done extensive inventories for rare species and communities on their ownership. But, there seems to have been no strategic process for identifying High Conservation Value Forests in the context of the larger landscape or ecoregion.

DFW

The Division of Fisheries and Wildlife has done little to delineate reserves on Wildlife Management Areas. But they, like DEM, have a high percentage of their ownership that has been reserved by default because of the slow pace of harvesting. The *Draft Forest Management Guidelines for WMAs* (2000) outlines a process for deciding which lands will receive active or passive management, noting that about 15% of WMA forestlands will be passively managed, with occasional selection cutting geared toward structural enrichment of presently even-aged forest. In describing passive management, the *Guidelines* state that, “Over time, these areas will develop late-seral forest conditions.... Passive management should occur across a range of sites, from high to low productivity, in order to create a diversity of late-seral forest conditions. Designations of areas for passive management on each WMA should be made jointly by District, Natural Heritage, and Forestry staff.” It is the intention that, in addition to lands with unique characteristics, representative areas of all natural forest community types are desired within reserved areas, and these criteria are in line with FSC guidelines for identifying High Conservation Value Forests.

DFW has addressed the policy aspect of reserved lands, i.e., passive management, but has not yet begun a comprehensive planning process to identify those lands that should be reserved. As evidenced on site visits, however, their foresters have taken a conservative approach to planning timber harvests. On Fox Den WMA, for instance, almost half of the ownership is coincident with the 1830's Primary Forest map, but barbed wire, stone walls, etc., on part of that area suggests that the designation may be in error. Nevertheless, the site plan for this area states that, “Until other evidence clarifies and corrects this contradiction...all areas that have been delineated and determined to be Primary Forest will be considered high priority areas for conservation action and protection....”

DEM

The Department of Environmental Management submitted three items of evidence in support of this element: (1) *Draft Wildlands Policy #262* (2000); *Massachusetts Wildlands* (no date); and (3) *Draft Wildlands Program Diversity Matrix* (1996). The draft policy provides for nominations of state forests, parks, or reservations as “Wildlands.” This designation can be applied to Backcountry areas or to Representative Natural Areas, and nominations can be made either by DEM staff or a member of the public. This policy does not seem to have been implemented, however, as evidenced by the fact that it is still in draft form and by observations during field visits and interviews with stakeholders. One management forester told the evaluation team that staff has not been able to nominate areas for designation as Wildlands for several years. A representative of The Nature Conservancy was “pretty certain” that members of the public have never been offered the opportunity to formally nominate lands for Wildlands protection.

Massachusetts Wildlands was published when Michael Dukakis was governor. It is a guide to five backcountry areas and six RNA's on lands managed by DEM. The backcountry area totals 5000 acres; RNAs amount to 142 acres, more than half of which is non-forest.

The *Draft Wildlands Program Diversity Matrix* is a file document that lists many of the same reserved areas in *Massachusetts Wildlands*, plus some others, including two proposed reserves. Nineteen areas are listed, 12 of which are forested. Acreages are not provided, but the matrix does present a summary of the ecological significance of each of these areas. Four old-growth sites are included. This document represents a good beginning toward a process of identifying representative reserve areas.

DEM has taken some steps in the right direction, although the establishment of a small number of Wildlands has seemingly been done without any strategic planning. Nominations have come from most of the district management foresters. The forested wildlands do not appear to represent more than 5% of the area managed by DEM (5% is the minimum FSC standard). Wildlands featured in the booklet are mapped (although it is not clear that they are delineated in the field). We have no evidence that those additional lands listed in the diversity matrix are delineated and mapped.

We were provided a written description of a planning process that would accelerate the proper identification and designation of reserves. This process would include the efforts of some volunteer ecologists who have been assessing potential old-growth stands on state lands. The process, as envisioned, is acceptable, but DEM, as a public agency, seems to have lagged badly on their efforts to establish reserves on state forests and parks. This would be a more serious concern were it not for the slow pace of their forest harvesting. The agency should consider criteria for High Conservation Value Forests as they carefully examine their holdings for ecologically significant landscapes and sites.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

- EOE, its three land-management agencies, and the Commonwealth are to be commended for an aggressive program of land acquisition and protection in recent years.
- Forest management has been slow paced on both DEM and DFW lands, so the lack of an aggressive planning effort to identify and protect ecologically significant and representative areas is not obvious from ground reconnaissance and site visits.
- Foresters in all three agencies seem to appreciate the importance of reserves and have not harvested areas that might have reserve-quality stands.
- MDC foresters and managers have identified a substantial proportion of their ownership as suitable for reserves and have mapped and designated such areas in their management plans.

Observations and Concerns

- The three agencies have not worked together or with other conservation organizations to plan comprehensively for reserves in Massachusetts. The BioMap project provides a suitable starting point for such an effort, as do FSC guidelines for delineating High Conservation Value Forests. Ecoregional plans developed by The Nature Conservancy should also be considered.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
<i>70</i>	<i>75</i>	<i>95</i>

Condition DEM/DFW 2002.8: Within 3 years of award of certification, DEM and DFW must identify, designate, and map an ecological reserve system of representative forest communities and age classes, as well as ecologically unique areas including sensitive habitats for plants and animals.

Condition MDC 2002.9: Within 1 year of award of certification, MDC must determine what percentage of MDC lands falls under HCVF category 4 for watershed values and then prepare an amendment to management plans that formally designates HCVF areas and describes how management of these lands is consistent with maintaining or enhancing HCVF attributes.

B.7. Importance Weighted Aggregate Score for Program Element B

Employing the PAIRWISE algorithm (described in the Forest Conservation Program Operations Manual), the evaluation team assigned weights of relative importance for each of the six criteria in this program element. Under SCS' accredited protocols, assignment of weights of relative importance is one means by which certification evaluations recognize and incorporate regional and sub-regional circumstances. In this case, the weights were designed to reflect the regional context in which the subject forest management unit is located: public forestlands located throughout the Commonwealth of Massachusetts. It should be noted that the assignment of weights of relative importance takes place independent of the performance evaluation. In fact, the weights of relative importance are assigned prior to the field investigations.

Criterion	Normalized Weights of Relative Importance
B1	0.349
B2	0.157
B3	0.157
B4	0.182
B5	0.056

B6	0.099
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Applying these normalized weights to the six assigned performance scores (presented and discussed above) leads to a single weighted average score for the program element:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
83	90	94

In that this weighted average scores for DEM, DFW, and MDC exceed the threshold of 80 points, overall performance with respect to this program element (Ecosystem Maintenance) is judged to be exemplary and certifiable.

9.1(C). OBSERVATIONS AND CONCLUSIONS REGARDING PROGRAM ELEMENT C: FINANCIAL, SOCIO-ECONOMIC AND LEGAL CONSIDERATIONS

Program element C is concerned with three non-biophysical issues. First, this program element addresses the financial viability of the ownership structure and management program. Financial viability is the linchpin of a long-term commitment to the principles and practices of sustainable forestry. Sustainable forestry, or any management regime, will only be practiced over the long run if it is capable of producing financial returns adequate to serve the financial needs and exigencies of the ownership. Secondly, this program element addresses the socio-economic dimension of sustainable forest management -- the human dimension of forestland use and the goods and services yielded from the forest. Sustainable forestry must sustain the social and economic benefits created by the forest. Special emphasis is placed upon sustaining the historical patterns of benefit, particularly to local and regional populations (including employees, contractors, neighbors, and local communities) who have derived utility from the forest, either directly or indirectly. As with the other program elements, the socio-economic evaluation must be prospective as well as historical. The key question is the extent to which current and historical levels and patterns of human benefit will be sustained into the future. Lastly, this program element addresses the legal and regulatory context in which the subject forest management operations are conducted to reflect the high priority placed upon legal compliance within the FSC Principles and Criteria.

C.1. Financial Stability

A management program exposed to the financial pressures of needed cash flow beyond levels the program produces will inevitably be replaced by less sustainable management driven by short-term cash generation. This is an inherently unstable condition and incompatible with the standards of a certified forest ownership. Considerations of financial stability of concern for this criterion include the stability of the management structure and the philosophy of the EOE and its forest management agencies in managing its trust obligations. This criterion is also concerned with the extent to which the financial requirements placed upon the management of the land are compatible with the short- and long-term capability of the forest to yield marketable products within the constraints of maintaining and/or restoring the forest ecosystem.

Another aspect of this criterion that is especially pertinent to public sector forest management operations is *institutional stability*. Matters related to continuity of management direction and approaches are especially important in situations where the chief executives (in this case, Secretary, Commissioners, and Directors) are statewide political appointees. These executives formally set the major policies guiding management of the Commonwealth's forestlands, wielding substantial discretion and ability to govern, to a substantial degree, the direction taken by different agencies, while each agency head generally defines the methods and style for pursuing that direction.

Findings and Conclusions:

The economy in Massachusetts is struggling, as is the case of most New England states. Most state agencies are facing budget reductions and forced reductions in staffing, accompanied by hiring freezes. The Boston metropolitan area continues strong growth, while some rural areas are transitioning toward new owners skeptical of the benefits of active forest management. Yet Massachusetts has a provision that allows a tax reduction of 95 percent for lands that are actively managed for forest products, to encourage non-industrial private owners to engage in forest management. Because so much of Massachusetts is developed, most public lands are located in the more rural and least populous areas. Thus, there is no ready-made constituency for forest management because most urban residents know little about or are little affected by forest management activities.

Despite the struggling economy and the lack of constituency for forest management, acquisition of additional lands and conservation easements is truly exemplary and ongoing (e.g., \$70 million to acquire 48,000 acres in the past 18 months and \$140 million to acquire 100,000 acres in the prior 4 years). Thus, there is strong political support for protecting public lands from conversion to other uses, but financial support for managing these lands is relatively weak.

The Commonwealth benefits from tremendous changes in its 500,000 acres of public forestland over the past century (see *Forest Resources of Massachusetts*, DEM, 2000). Heavy harvesting coupled with abandoned farmland resulted in 80 percent of forests being in a seedling/sapling condition and saw timber at only 5 % in 1915. Forests are now only 5 % seedling/sapling, but 72 % saw timber, a complete reversal. Using averages for the state (6282 board feet per acre) to apply to 500,00 acres of public lands would yield a standing volume of approximately 3.1 billion board feet. A conservative stumpage rate of \$40-60/thousand board feet yields a timber value of about \$1.3 to 2 billion, which should yield several million in direct revenue annually, and tens of millions more in economic benefits if multiplier effects are considered. (MDC comes closest to achieving this kind of economy by generating nearly \$1 million annually on only 65,000 actively managed acres.) But actual accomplishments are far below this level, and are limited by the staffing and budget available to invest in forest management, most especially for DFW and DEM.

The sentiment exists amongst stakeholders and agency personnel alike that EOEA does not enjoy a particularly strong political profile with the State legislature, relative to all other state agencies. MDC and Parks, within EOEA, have established a stronger presence than DFW and Forests. However, most note that the trend is improving, as evidenced by the recent \$700 million multi-year environmental bond bill, which is the largest in Massachusetts history. A portion of this bond will be distributed annually to these three agencies--about \$10 million each for a variety of purposes; mostly capital investment. Economic sustainability will be enhanced as a result of this bond measure.

The Commonwealth has a payment-in-lieu-of-taxes statute (PILOT) that provides annual appropriations to the 351 towns based on a per-acre payment to help offset the tax losses associated with public lands, which are not assessed as tax base properties. The amount appropriated in recent years falls far short of the authorized amount; only 20-40 % according to interviews with town selectmen. Towns with large amounts of state land are thus disproportionately affected. However, the Commonwealth Forest Products Trust Fund returns 8 % of timber harvest revenues from state forests to towns as a harvest tax (this tax applies to all timber harvest in Massachusetts). For lands acquired after 1987, 50 % of the timber harvest revenues are returned to the towns.

MDC, DFW, and DEM budgets are all relatively stable, but minimally sufficient given the responsibilities of managing, in aggregate, 10% of Commonwealth lands. Both characteristics are quite typical of most state resource agencies. Yet each agency has a unique budget approach.

MDC

MDC funds its operations at Quabbin, Wachusett, Ware, and Sudbury out of its general appropriation. Forest management revenues are used to reduce rates charged to consumers, thus there is a general recognition that “investing” in forestry contributes directly to improved water rates as well as maintaining watershed health. Revenues from forest product sales are quite significant and stable, and funding for forest management activities has been quite stable for the past 5 years. There is a concern that MDC may face future budget and staff reductions and furloughs similar to what many agencies are now experiencing.

Worth noting is the fact that MDC relies on surface water sources for municipal drinking water supply. EPA carefully reviews such surface water sources. All such supplies are required to filter the water prior to delivery, or to qualify for a waiver from filtration based on a demonstration of adequate control over potential sources of pollution. Filtration plants are extremely expensive, so that the incentive for avoiding their construction is significant. The ability of MDC to invest in forest management on their watersheds to assure continued high quality drinking water production enables them, at least in part, to forego the expenditure of funds for filtration facilities, thus saving customers from much higher water rates.

MDC management plans clearly articulate an approach that relies on maintaining about two-thirds of the landscape in a young forest condition to minimize water quality consequences associated with hurricane disturbances. This regime relies on a consistent level of activity. To date, this active management of MDC forests generates relatively consistent annual revenues (see table below) that directly benefit their customers, against an annual operating budget of about \$650-700 thousand. The “area control” evident on MDC lands has put them on a good trajectory, but in order to sustain this landscape

condition (as well as the revenue stream) the decline in funding and staffing must be reversed.

Year	Timber Product Revenue (thousands)
1998	813
1999	1,024
2000	1,107
2001	939
2002	742

MDC properties have an extensive road system that is well maintained, with little need as yet to contemplate large construction investments. But as the road system ages some increased capital investments (e.g., bridge and large culvert replacements) will be inevitable, and at present there is no mechanism to finance such prospective costs. MDC would benefit by creating a capital investment strategy in anticipation of this need.

DFW

DFW forestry operations are funded out of receipts from hunting and fishing license sales, as well as revenues from timber product sales that average almost \$100,000 per year. DFW has chosen to invest in forest management to enhance wildlife habitats, providing an annual budget of about \$180,000 per year. This is quite low compared to MDC, although both manage comparable size landscapes -- a little over 100,000 acres each. However, DFW lands are scattered, while MDC lands are concentrated around their reservoirs. DFW has a strong incentive for active management since timber harvest revenues are returned to accounts that may be used by DFW to directly fund additional habitat management. This budget model is sustainable and incentive driven.

DFW properties are generally small in size so they tend to “make do” with the existing road infrastructure, which is quite often inherited with acquired properties. But as the road system ages investments will be required. At present there is no mechanism to finance such prospective costs. DFW would benefit by creating a capital investment strategy in anticipation of this need.

DEM

Of the agencies reviewed, DEM has the most complex, yet most traditional, budget model. Budget requests are generated through the Director of Forests and Parks, to the DEM Commission, and then to EOEA, and finally to the legislature for appropriation. Revenues generated by DEM harvest activities are deposited into the general treasury, although these are “net” revenues since certain timber sale expenses are deducted (e.g. road reconstruction). DEM’s Bureau of Forestry has several components, such as service forestry and fire management, but the state forestlands are administered by management foresters. Recreation management on the state forests is the responsibility of Bureau of Recreation staff.

DEM's 2nd Century Fund allows revenues to be retained once a minimum amount is deposited in the General Fund. DEM has just filed retained revenue legislation that would send 2/3 of timber revenues to the BOF and 1/3 to the town in which the sale occurred.

The forest management budgets have been relatively stable for the past several years, while revenues are rising. Budgets average about \$550,000 for the past 5 years. Timber harvest revenue has been rising, due to both larger harvest volumes and improving product markets.

Year	Timber Product Revenue (thousands)
1998	160
1999	156
2000	299
2001	610
2002	692

Activity was limited in 1998-99 due to a concerted effort to complete work on the continuous forest inventory (CFI). DEM utilized available staff to complete CFI field work, thus limiting the amount of timber sale preparation. Once the CFI work was completed, timber harvest, and thus revenue, increased.

Revenues now exceed expenditures, and could be increased if DEM were to take advantage of good wood product markets and actively explore methods other than lump sum, sealed bids. Financial stability will be enhanced assuming DEM's legislative initiative for retained funds is realized.

DEM manages a variety of properties, many of which are quite small, but several state forests are large, contiguous areas. In many of these areas, road systems are inadequate or even non-existent. Large capital investments are looming as an urgent need for heavy maintenance, reconstruction, or new construction. DEM has no comprehensive financing strategy they rely on to meet a need of this magnitude, and their organizational structure (being a bureau within a division focused largely on state parks) hurts their ability to address this issue. DEM would benefit by creating an effective capital investment strategy.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

The following are particular strengths observed during the evaluation process:

- EOEA is considering FSC certification to ensure that agency practices satisfy sustainability criteria and to improve market diversification.

- All three agency budgets have been relatively stable, as indicated by trends for the past 5 years.
- For the most part, DEM, DFW, and MDC management decisions are ultimately driven by resource conditions rather than exogenous financial demands.
- MDC enjoys a budget that allows for active, sustainable management most consistent with the FSC standard, and also generates substantial revenues.
- MDC and DFW have some incentives for active management due to “revenue return.”
- Inter-generational obligations (e.g. retention of species diversity, protection of water courses and vernal pools, retaining and creating den trees) are increasingly considered in forest management practices.

Observations and Concerns

The evaluation team observed no circumstances to indicate that management of forestlands is in non-compliance with any fatal flaw requirement pertinent to this criterion of certification. However, the team observed management strategies that require improvement over time that specifically include:

- There is a lack of funding allocated to non-timber programs, such as public use management, non-timber special forest products, and related activities (e.g. boundary posting and maintenance) negatively affecting forest management practices, and ultimately decreasing forest land’s long-term value. This is more true of DEM than MDC or DFW.
- DEM has huge capital needs, and could benefit by putting as much work as possible into timber sales. However, the Team observed no policy regarding priorities of the type of work to include in timber sales and little anecdotal evidence that field foresters are encouraged to use this mechanism
- Roads are an asset, but can quickly become liabilities if not properly maintained. Although many roads have been “inherited,” the agencies have little capital capacity to construct, reconstruct, or maintain road systems.

MDC has been well-staffed and their staff is remarkably productive. The agency also has stable funding and strong revenue production. Their financial stability is excellent. DFW has a bright future -- they are remarkably productive for such a small staff, they are reimbursed by the federal government for habitat improvements, and timber revenues are returned to DFW -- but will need budget increases if they are to realize their harvest goals. DEM produces significantly less than MDC even though staff size is comparable (see Table 9.A.2), has significant road liabilities on a large and dispersed land base, and has little incentive to generate timber revenue because they do not receive a return from harvest activity.

The evaluation team visited several sites where boundaries were not marked and where maintenance of boundaries was deficient (FSC Standard 2.1(b)). Stakeholder interviews also cited this as a chronic problem, as did DEM and DFW staff. This warranted a condition to remedy this deficiency. In addition, the evaluation team noted opportunities

to improve financing forest management on public lands in light of the prospect of state-imposed austerity measures, as was done in Pennsylvania following a certification review

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
82	90	95

Condition DEM/DFW 2002.11

Phase I

Within 6 months of award of respective certifications, develop and implement a work plan to address unmarked property boundaries. All boundaries must be marked on active timber sales prior to harvesting where other landowners abut the sale area.

Phase II

All boundaries that are not in legal dispute must be marked within 5 years of certification. Additionally DEM/DFW must begin the process of clarifying the legal status of those boundaries that are in dispute, and actions to resolve these disputes must be underway by the end of the 5-year period.

Condition EOEA - DEM/DFW 2002.12:

Within 1 year of award of certification, EOEA working with the appropriate Department, must develop and implement a work plan to identify and begin to resolve disputed ownership issues, especially where dispute and lack of authority leads to resource damage; e.g., land to the north of Little Widgeon Pond on Myles Standish State Forest.

Recommendation 2002.3

DEM should pursue legislative support for retention of at least 25 % of timber harvest revenues for operational budgets to provide an incentive for investment in forest management of state forests.

C.2. Community and Public Involvement

This criterion focuses on the extent to which the agencies are “good neighbors.” More specifically, in addressing this criterion, two broad issues were assessed. First, it is concerned with the degree to which forest management practices and personnel contribute to the economic and social well-being of the most directly affected local communities and the general region in which the forest is located. Second, this criterion is broadly concerned with the flow of information to non-agency stakeholders, and their involvement in planning and decision-making. This interface between the agencies and the surrounding communities and regional economies is related to the sale of timber, access for public use, and agency contributions to the local communities in the form of employment opportunities, taxes, purchase of goods and services, and involvement in

community affairs. Explicit in this criterion are the communities' rights to and expectations regarding the forest; also the extent to which stakeholders are informed of agency management activities, and how stakeholder interests are accommodated in decision making.

Findings and Conclusions:

It was clear to the evaluation team that executives, managers, and field-level staff are aware of the importance of integrating social dimensions into forest management. Factors contributing to this include increased public scrutiny and desire for participatory management of public lands, increasing negative impacts due to public use and recreation, development patterns that result in ever-increasing numbers of people living adjacent to or near public lands, and the view that public lands could play a much larger role in the Commonwealth's forest product sector as well as its general economy.

The forest management agencies of EOEA -- DEM, DFW, and MDC -- manage 10 % of all land in Massachusetts, a state with relatively little federal land. This significant portion of the Commonwealth's land provides numerous vital benefits to the commonwealth (e.g., water, biodiversity, timber revenue, recreation).

The picture that emerged for the evaluation team is that each agency has a somewhat distinct public "persona," generally related to their distinct statutory-missions. The forest products industry is regionally significant, with Massachusetts' products going to primary and secondary in-state producers, although most wood products go elsewhere in the Northeast and to Canada. State lands are producing timber harvests significantly less than their sustainable potential (see Table 9.A.1), although MDC is closer than DFW and DEM. There is no explicit EOEA or agency policy (nor did discussions with field personnel indicate any) favoring local economies (local purchasing, local production, local employment). Thus, an "open market" exists for forest products derived from state lands.

There is a consistent demand for wood from private lands. Since industrial lands are not prevalent (as in Maine, for example), this demand is met from smaller parcels. The evaluation team saw and heard much anecdotal evidence about "high-grading" harvest practices that are designed to extract maximum short-term value from some private parcels, but often leave the forest depleted of future earning potential. The land managers that were the subject of this evaluation are not directly responsible for addressing this issue, except tangentially to lead by example and demonstrate exceptional sustainable management. However, the DEM's Service Forestry, which is charged with oversight of forest management on private lands, is responsible for overseeing the Forest Cutting Practices Act (Ch. 132) to help prevent poor management practices, such as high grading. Neither EOEA nor the agencies do much public advocacy for sustainable forestry. Much of the public involvement is done on an issue-by-issue basis, with limited effort in establishing a consistently excellent process of stakeholder involvement over the long-term, regardless of land management issues.

MDC

MDC has an explicit mission to manage their forestlands for continuous high quality water delivery to the Boston metropolitan area. This mission is well articulated in their plans, and they employ very active management of their forests to achieve their objectives. Generally speaking, public use of MDC lands and waters is restricted to limit potential water quality compromises. MDC employs public planning and decision-making processes. Documentation of objectives, environmental considerations, alternatives, consequences, and decision rationale is explicit. Public access to process, public understanding of activities and why they occur, and public acceptance of MDC's achievements are all quite good. MDC's sound planning and decision-making processes cover key concerns of stakeholders, such as procedures for identifying and protecting rare flora, fauna, and cultural resources.

Some examples are noteworthy. About 10 years ago, MDC was aware that excessive deer populations were, through repeated browsing, reducing establishment of young trees. Certain species, such as oaks and black cherry, are highly desired by deer. These species, among others, are often lacking in the young tree component of forests. Because MDC stresses repeated establishment and perpetuation of forests up to 60 years old, they determined that deer populations needed to be reduced through special hunting seasons. Although this was a highly-charged political issue, MDC methodically built the case for change, and succeeded in achieving their objective. The response of young trees--now "released" to establish and grow—has been dramatic. Public lands, by their very existence, tend to invite recreation use. MDC was concerned that, without explicit controls, activities like snowmobiling and mountain biking could compromise water quality objectives. Again, MDC conducted an open, inclusive access plan for their lands. Although public use is severely restricted, the decision is explicit, well understood, and rational.

MDC also provides good documentation of their timber harvest activities. Because their land ownership pattern is more cohesive, issues with neighbors are reduced. They do maintain exemplary relations with regulatory agencies. MDC also conducts an annual public "workshop" to review the progress on its Land Management Plans and solicit public concerns.

DFW

DFW's traditional management of fish and game populations for fishing and hunting constituencies has been augmented with forest management of DFW properties to improve habitats for game and non-game species. DFW forestry staffing is small (3 persons for more than 100,000 acres), but active and well-organized. Thus, they do not have as long a history of engagement with their stakeholders and neighbors as do MDC and DEM.

Their planning documents are very thorough in explaining their objectives of managing for healthy forest conditions and diverse habitats, utilizing forest management techniques to achieve varied objectives. DFW does a good job of informing neighbors of planned activities and is very responsive to those who comment on or inquire about their projects. There is no evidence that their activities are especially controversial. DFW operates with a largely informal approach to public access, planning, and to decision making. As their level of activity continues to grow over time, DFW will need to formalize some of their public involvement procedures.

DEM

DEM's biggest controversy is that many stakeholders think they are not doing enough work annually to adequately manage 278,000 acres. "Benign neglect" would characterize this view of DEM's approach to their land management responsibilities, thus leaving the Commonwealth's residents "cheated" by not deriving optimal value from public lands. Furthermore, and equally controversial, the lack of management planning is very much related to this issue of benign neglect (see criterion A.6). This lack of management is admittedly a less serious problem than if lands were over-harvested in an unsustainable regime, yet it does not represent exemplary forest management.

DEM's public involvement approaches are quite open, although comprehensive planning is limited. This has the effect of precluding meaningful stakeholder interaction. Citizen interest can be quite high. For example, a ski area expansion proposal on Wachusett Mountain elicited strong local opposition related to the possible existence of old-growth forest near the summit. After several years of contentious conflict, DEM authorized the expansion to improve snowboarding opportunities and avoided directly and negatively impacting the nearby old growth. The issue is now in litigation.

The lack of an efficient planning process makes it difficult for DEM to arrive at timely decisions, and difficult for stakeholders to effectively engage the agency to forward their interests. Clearly defined processes and parameters benefit both stakeholders and the agencies that serve them.

DEM's relations with Massachusetts' Nipmuck appears to be positive. Other tribes have expressed little interest in forestland management. DEM meets regularly with Nipmuck tribal representatives, which the Tribe describes as meaningful and effective.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

In assessing the above elements of community and public involvement, specific strengths observed during the evaluation process include:

- EOE 5 has shown good initiative in seeking FSC certification of their public lands.

- For all agencies, staff at all levels have an “open door” policy in responding to individual concerns and often seek out specific stakeholders in an effort to understand their perspectives or to acquire information.
- All agencies, both at the headquarters and the field level, make a concerted effort to inform the public of their land management activities by sending relevant information to interested groups and individuals.
- All agency staff are well integrated into their respective communities of residence. They reside in the vicinities of the forest areas they manage, thereby helping to reinvest in the local communities through involvement in community activities and civic organizations, as well as through purchasing of goods and services, locally.
- Agency personnel participate in ad hoc and standing committees concerned with land management and forestry issues.
- Most of the timber contracts and road work are awarded to local businesses.

Observations and Concerns

The evaluation team observed no circumstances to indicate that management of public forestlands are in non-compliance with any fatal flaw requirements pertinent to this criterion. However, the team observed some management strategies that require improvement over time. Specifically, these include:

- Lack of a clear public involvement process leaves DEM and to a lesser degree DFW generally ineffective in utilizing the public to help develop, modify, or implement management plans and activities.
- A notable weakness is the lack of procedures for identifying and protecting areas of special cultural or religious significance. DEM and DFW are not taking seriously enough their obligation to manage historic and cultural properties as public assets in trust on behalf of the people of the Commonwealth. DEM recently hired a staff archaeologist who transferred from MDC, where he worked steadily over many years to improve attention to cultural resources during harvesting, however, at the time of the evaluation his interaction with DEM Bureau of Forestry was minimal. Interaction with the Massachusetts Historical Commission is minimal. Although some of DEM and all of the DFW foresters exhibited sensitivity to historical sites (e.g., stone walls and cellars) there is little focus on pre-historical archeological sites. Unlike MDC, protection of cultural resources has not been folded into the management planning process.
- Most DFW and DEM public involvement is done on an issue-by-issue basis, lacking the benefits associated with strategic comprehensive planning such as that done by MDC.
- Little or no consideration is given to preference for minority or local producers. Instead, contracts are awarded on a lump sum sealed bid competitive basis, per Commonwealth bidding laws, to the highest bidder.

MDC takes advantage of its unique mission and watershed-based land ownership pattern to focus their public involvement. They are excellent at identifying issues, fostering

public discourse, and making explicit decisions. DFW does well at local involvement on specific projects spread over a highly dispersed landscape. DEM is effective at providing public notice of planned activities and addressing issues. They have arguably the most challenging responsibility due to the higher profile and greatest public use of state forest properties. All agencies are integrated into nearby communities and communities of interest.

The DEM and DFW weakness in identifying and protecting areas of special cultural or religious significance must be addressed, and DEM's and DFW's interaction with the Massachusetts Historical Commission must be improved. All agencies need to make a concerted effort to more effectively and publicly market the benefits of forest management in an increasingly urban state.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
85	85	90

Condition DEM/DFW 2002.16: Within 1 year of award of certification, DEM and DFW must implement a training program to recognize and protect historical and pre-historical archeological sites. Note: In addition to helping overall management of cultural resources this condition should improve cooperation with the Massachusetts Historical Commission.

Recommendation 2002.4:

EOEA should work with MDC, DFW, and DEM to identify and seize opportunities to more assertively illustrate to the citizenry and legislature the benefits of public forestlands to the Commonwealth. This marketing effort should demonstrate the economic and social benefits of active forest management.

C.3. Public Use Management

Of concern in this criterion are the efforts taken to facilitate and manage the use of public forestlands by local people, such as hunters anglers, hikers, campers and firewood gatherers. Consistent with the recognized human dimension to sustainable forestry, sound forest management facilitates human use while managing that use to assure an appropriate balance with other uses that may be in conflict (e.g., timber harvesting and resource protection).

The operation must consider and provide for the continuance of legal or customary tenure or use rights of local communities and indigenous peoples, if such rights duly exist. Other issues of particular concern are whether policies guide the extent to which the general public has access to state forestlands for recreational purposes, whether barriers

exist to this public use, and whether the management of these uses minimizes resource damage.

Findings and Conclusions:

In addition to generating revenue for beneficiaries through timber sales, public forestlands must also meet a variety of social needs generally related to recreation access. This issue of public use management is of growing importance as urbanization and development of rural forest lands spreads. Public uses may conflict with one another as well as with timber harvest objectives. With the increasing population in Massachusetts, public use management will only become a more prominent fixture in future management considerations. There will be a need to address both the environmental negative impacts of users, as well as squarely face increased pressures to provide additional recreation opportunities and public access.

In this criterion, the team was specifically interested in the agency's ability to balance the goals of public use access and management with other forest management obligations. The degree to which public use management is in accordance with certifiable, exemplary forest management was also assessed. These EOE 5 agencies are statutorily focused on forest management, and it is evident that they do not place a high priority on concurrent management for recreation values. However, they are aware of recreation demands. Thus, these agencies either limit recreation activities that conflict with their objectives (municipal water supply) or they strive to passively accommodate recreation demand (DEM's Division of Forests and Parks assuming management responsibility on state forests). DEM lands support 14 million visits annually. In general, it was observed that the quality of public use management is quite good, with the exception of off-highway vehicles (OHVs).

MDC

Public use management could best be described on MDC property as carefully limited. Roads are generally gated and locked; motorized vehicles are prohibited; cross-country skiing is not permitted, although snowshoeing is; shoreline access is very tightly restricted -- all of which are rational if the priority is protecting water quality. MDC has been very public and thorough and explicit in articulating their policies and they are consistent (although it seems paradoxical that motorboats are allowed on Quabbin Reservoir, but cross-country skiing is not allowed on adjacent lands). Given the somewhat unique purposes for which these lands are publicly held, it is understandable that MDC has chosen to make them not generally available for public use. The evaluation team would not arbitrarily apply a standard that required lands to be more available for public use since MDC has been so thorough about their considerations, and the public largely accepts these limitations as reasonable.

DFW

There is little overt evidence that DFW is actively managing their lands for public use, although use occurs and DFW welcomes this--especially hunting and fishing. Indeed, they have a policy that new land acquisitions must stipulate public access for hunting and fishing as part of the title, which is true of all lands bought with the last 3 environmental bond bills. Unless the agency can justify closure to the Secretary, there is a "presumption of openness". One stakeholder felt this was not necessarily appropriate in every case, such as acquiring a parcel for non-game habitat. Generally, DFW lands are valued and used by stakeholders as recreation assets, such use being adequately accommodated by DFW but with little in the way of infrastructure and management advocacy.

DEM

Public use, and more specifically, recreation, is largely not a priority, perhaps due to existence of the Bureau of Recreation, another state agency, which is viewed by DEM's Bureau of Forests as the entity most responsible for recreation management. Many field personnel viewed the former supervisory structure that placed management foresters under the direction of Regional Directors as inappropriate and fragmenting their primary responsibility for forest management. This has recently changed so that management foresters now directly serve managers in the Bureau of Forestry. The effectiveness of this recent shift has yet to be measured. But there remains a strong undertone that when conducting their forestry work, DEM Foresters recognize public recreation values, while at the same time attempting to clarify that managing recreation is not the function of their positions.

The low priority given to addressing OHV issues was observed by the evaluation team on numerous occasions, and is leading to ever more serious consequences. Massachusetts is one of the only states in the region that permit OHV use on state lands (Maine does also). A deliberate choice was made a few years ago to designate five forests in western Massachusetts where OHV use was to be permitted, while other sites were closed. These five state forests now serve as a "gathering point" for OHV activity. In addition, OHV use continues on lands where it is not permitted. The evaluation team noted numerous examples of damage to soil, water, and vegetation at sites where OHV activity is permitted as well as where it is prohibited. Stakeholder feedback also raised issues, such as the Little Widgeon Pond vicinity north of Standish State Forest, on DEM, DFW, and Town of Plymouth land, where illegal OHV is damaging state lands and sensitive vegetation due to lack of enforcement and confusion over jurisdiction. Although managing OHV use and mitigating damage is a challenging problem, the evaluation team is of the opinion that DEM managers are not doing all that they can.

State forests are open and available for a wide variety of public uses and there are remarkably few restrictions. The evaluation team saw numerous sites where snow machine trail systems traversed state forests. These trails were adequately signed and there was no evidence of resource damage (unlike OHVs). Roads and trails are generally open, although some restrictions and closures existed where appropriate. Some roads are not maintained to a standard that allows or encourages public use.

There was anecdotal reference to theft of timber products from state forests from some consulting foresters, although the evaluation team did not observe any evidence of theft. This may be related to inadequate property boundary maintenance mentioned earlier (see C.1).

EOEA Summary Assessment relative to the SCS criteria:

Strengths

The following are specific strengths observed during the evaluation process:

- Consideration is given to recreational use when designing timber sales.
- Vistas are maintained to sustain scenic views in some high use areas.
- DEM displays interpretive signs at many timber harvesting sites discussing the reasons for logging, with a contact number for the management forester.
- In certain situations, gates are erected to protect the resources from environmental damage.

Observations and Concerns

The evaluation team observed no circumstances to indicate that management of forestlands is in non-compliance with any fatal flaw requirement pertinent to this certification. However, based on the above discussion, the team observed management strategies that require improvement over time. To summarize, these include:

- Much of the public use is occurring without explicit management of activities.
- Many managers and field staff minimize their obligations to address public use issues by discounting them as being beyond or in conflict with their agencies' legal mandate.
- OHV activities are currently occurring on DEM and DFW lands where prohibited, and where permitted, OHV activity is causing excessive damage to resources.
- Mountain biking is an example of a rapidly increasing activity that DEM and DFW could take the initiative in creating recreation opportunities on state forests, and do so in ways that seek to minimize associated problems like erosion.
- The occurrence of illegal activities (e.g., shooting, garbage dumping) is increasing on public forestlands according to stakeholders and staff. DFW and DEM are able to do little to protect their lands from theft and illicit activity. This is an exceedingly difficult problem to fix given the many small scattered parcels with town roads passing through them.
- More could be done to utilize state properties for education and training for students and local residents.

In conclusion MDC provides for very little public use of their properties, but is doing a commendable job of portraying the need for restrictions to the public so that these limitations are understood and accepted. DFW and DEM lands are generally open to public use, providing Massachusetts's citizens a wealth of outdoor recreation opportunity, although both agencies could do more to seize opportunities to manage recreation issues proactively.

The most notable weakness being that evident OHV abuse of lands and resources is chronic and will not improve unless action is taken to give EOE and DEM greater capacity to manage this recreation activity.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
85	85	85

Condition DEM/DFW 2002.13: Within 1 year of the respective award of certification, DEM and DFW must develop and implement work plans to manage unauthorized OHV use. (Consider \$5 annual vehicle fee to fund work – Rec 2002.5). Note: SCS is aware that enforcement of illegal OHV use is under the jurisdiction of the Environmental Police, thus the work plan(s) should focus on improved cooperation with Environmental Police and or other control mechanisms that discourage illegal use.

Recommendation 2002.5

EOEA should pursue legislative authority to designate an annual fee (many states assess \$5) for OHV's operating on state forests to be used for capital improvements, and operation and maintenance of the OHV trail system. Management of the fund could be by committee appointed by the Secretary to disburse funds and select projects.

C.4. Investment of Capital and Personnel

To be viable in the long run, sustainable forestry requires ongoing investment in the management program. Two principal vectors of investment are: (1) the professional workforce (investment in attracting and retaining competent professionals, and maintaining the currency of their knowledge and skill base); and (2) large capital items, such as roads, harvesting equipment, stand improvements, and resource protection programs. Sustainable forestry involves active, ongoing investment in the health of the forest and the mechanisms for efficiently producing marketable products at a minimum negative impact to the environment.

Findings and Conclusions:

Like many states, Massachusetts cannot be said to lavish resources on forest management. Annual appropriations, coupled with federal assistance and the recent \$700 million bond measure, should sustain EOE's forest management operations. However, investments in capital improvements and personnel cannot be neglected. Roads, including bridges and culverts, are looming as a growing liability lacking a concerted effort to identify and fix priority problems. The vehicle fleet for all three agencies is becoming old enough that it now contributes directly to loss of employee efficiency, and is becoming a safety issue. In addition, the recent losses of staff to retirement have helped meet the Governor's goal of a smaller state workforce, but the inability to hire

replacements will directly limit the agencies' ability to achieve their objectives--at a time when new land acquisitions are adding significantly to their responsibilities.

As for training, the Commonwealth does not supply a comprehensive suite of mandatory or elective opportunities for employees, to include components like orientation for new employees, basic supervision, or safety. Nor does there appear to be a culture that values investment in leadership training for managers and those seeking management positions. Rather, they rely on the principle that competent performers will emerge over time, and that outstanding employees will take the initiative to improve themselves. Foresters now must be certified by a board based on individuals obtaining no less than 20 hours of qualifying experience and training annually. This is often achieved by attending professional conferences, which keeps staff involved in their respective professional societies, although travel to out of state events is quite restricted. There is an evident lack of diversity throughout these forestry organizations.

MDC

MDC has a robust, highly-skilled, well-trained, strong organization. They are utilizing new technology adroitly, and their investment in tools such as geographic information systems (GIS) as well as information such as rare plant surveys, help them improve efficiency, record-keeping, and quality of work. As is the case with DFW and DEM as well, the new requirement, that foresters be certified and acquire sufficient annual training to maintain their certification, is working well for MDC. Employees assume personal responsibility for their own certification and tailor training to meet their needs. Limitations on out-of-state travel and low budgets are obstacles that employees must overcome.

MDC lands are currently served by a good road system that is well maintained, although they do not commonly use timber harvest revenues for reinvesting in road construction and reconstruction. Given the history of storms and the potential for significant catastrophic losses in infrastructure, EOE 5 should give some thought to (1) the benefits of annual maintenance as a hedge against catastrophic losses, and (2) a contingency strategy to finance emergency road repairs should they become necessary.

DFW

DFW's small three-person staff all had obtained advanced degrees (one position is now vacant with the departure of an individual to a DFW supervisory position), a testimony to the benefits of recruiting skilled professionals and giving them a challenge. Although their land base and harvest plan equals that of MDC (see Table 9.A.1), they operate with only three field foresters compared to eight for MDC. Their salary structure is below that of the other two agencies. Filling the vacancy will be essential if DFW is to retain any reasonable hope of maintaining their established production. Beyond that, DFW will require significantly more staff (at least 2 to 3 times present levels) to achieve their harvest goals once planning activities are completed. DFW roads were observed to be in a generally good condition, with upgrade needs met through timber harvest activity, but

the earlier cautions apply here as well. DFW fleet issues exist also, although their needs are few due to the small number of staff.

DEM

The lack of capital investment in roads and vehicles noted above is a significant issue for DEM because they are a larger organization with more land to manage. The DEM roads and fleet are in the worst condition of the three agencies we reviewed. A credible approach to address these looming issues must be developed immediately. Poorly maintained roads are a source of sedimentation that diminishes water quality, as well as limiting access to public lands. The lack of useable roads, or in some cases, the lack of any road infrastructure at all, leaves some areas without the capacity to engage in timber harvest. Lacking an explicit determination that such lands are to be maintained in a roadless condition (a possible outcome of strategic planning), this appears to be an oversight rather than a deliberate outcome.

The evaluation team discussed vehicle fleet issues often throughout our review, with little in the way of simple solutions to show for it. What is known is that most of the DEM fleet dates to a bulk purchase of 10 vehicles. Bluntly, these vehicles are no longer serving the needs of DEM well. Basic employee safety is an issue, as well as simple efficiency due to frequent breakdowns and costly repairs. Vehicle replacements are handled by the Office of Vehicle Management, at the request of the agencies. Immense frustration is evident as annual requests go unmet. This issue needs resolution.

The current DEM staffing as depicted on organization charts is adequate in total numbers, but lacking in specialties that could benefit their management such as plant ecology and forest engineering. But critical vacancies exist and more are anticipated in the near future that, if left vacant, will limit DEM's effectiveness -- below reasonable thresholds in the judgment of the evaluation team. At the same time, these vacancies present opportunities to enhance DEM's skill mix and diversity.

EOEA Summary Assessment relative to the SCS criteria:

Strengths

The evaluation team observed several strengths in EOE's investment in capital items and personnel. Specifically, they include the following observations:

- Investments in computer technology to maintain efficiency are good.
- Offices and facilities are good, well-distributed, and close to the lands being managed.
- Employees take the initiative to secure training and development to maintain their certification, and are compensated for costs.
- The recent \$700 million bond gives each agency the opportunity to make strategic capital investments for the next 3 years.
- There has been a sizable investment of time and resources to developing GIS-based planning and tracking tools.

Observations and Concerns

The evaluation team observed no circumstances to indicate that EOE's management of its forestlands are in non-compliance with any fatal flaw requirement pertinent to this certification. However, the team observed management strategies that require improvement over time that specifically include:

- The void in leadership created by the vacant DEM Chief Forester position is limiting the bureau's ability to address chronic issues like inefficiency, fleet safety, and OHV damage. Opportunities like increasing operating budgets from timber revenue are not being addressed, however since the time of the 1st draft report legislation was just proposed to increase revenue retention by both DEM and the town in which the harvest occurs.
- More resource professionals with a multi-disciplinary background in ecosystem management are needed.
- The existing road system has become a significant liability, especially on DEM lands.
- We observed little attention given to ecological and socio-economic functions of a comprehensive monitoring program, such as non-game wildlife and unique habitats and negative impacts from public use
- The vehicle fleet for all three agencies is not safe and no longer meets their transportation needs.

In conclusion MDC has a very effective delivery system for achieving their sustainable harvest goals. They employ a professional staff, and maintain their skills and competencies. Investments in technology are keyed to providing and using meaningful information to enhance forest management. MDC road systems are currently well-maintained but will require capital investments in the future. DFW has, if anything, an overachieving staff that is well-educated, highly motivated, and very professional. This staff cannot achieve their increased harvest goals unless investments are made for additional staff. Technology tools and training are well-matched to the staff to sustain their work. Road systems are a looming issue. DEM is generally viewed by stakeholders as underachieving. Although staff numbers are adequate, DEM could benefit from hiring new skills. Putting new GIS technology to work will be essential to improve efficiency. Roads are a significant existing liability and will only become worse without a good investment strategy. The vehicle fleet for all agencies is inadequate, and in many cases unsafe. It is not meeting the needs of these organizations, and is an issue that seems to defy resolution. The agencies urgently need to have their fleet needs addressed. EOE has an important role to play in working with OVM to resolve this issue. In addition, significant opportunities for benefits of the bond measure will be lost without a comprehensive, multi-year investment strategy.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
82	85	92

Condition DFW/DEM/MDC 2002.14: Considering the immediate safety and productivity concerns of an aging fleet of vehicles, agencies must work with EOEA and OVM to upgrade vehicle fleet. Annual reports on the status of upgrading the fleet must be provided throughout the 5-year certification period.

Recommendation 2002.6:

EOEA should have agencies develop an annual investment strategy to enhance use of the \$700 million bond measure.

Recommendation 2002.7:

MDC should investigate retaining a portion of harvesting revenues for reinvesting in road construction and reconstruction, as well as other necessary capital projects.

C.5. Employee and Contractor Relations

Those employed (either directly or as independent contractors) to work on forestlands are most impacted by practices and policies. Additionally, it is their long-term economic well-being that is most directly at risk in the event that timber management activities are not sustainable. Therefore, issues such as employee wages, morale, safety, and participation in community activities, as well as contractor attitudes and contract rates are of concern to this criterion.

Findings and Conclusions:

Evaluation of employee relations is somewhat subjective and colored by current events. Massachusetts is going through austerity measures associated with budget restrictions--early retirement incentives, furloughs, hiring freezes, travel restrictions--that negatively impact employee morale.

MDC

MDC is broadly viewed as a model agency in the eyes of those interviewed by the evaluation team--extremely professional, efficient, businesslike, and energetic in achieving the goal of managing forestlands for quality water production. MDC has a relatively good financial situation, plus a firm picture of how they are achieving their vision, and this contributes to good morale and confidence for the future.

MDC's contractor relations were very good, and the evaluation team met several contractors at work sites who had tremendous allegiance to the agency, preferring to work on their contracts whenever possible. Telephone discussions with other contractors corroborated this view, although minority negative opinions were registered.

Bidding for timber contracts is very competitive. Lump sum sealed bids are normal, and viewed as fair and even-handed. This does allow for a very open market, with some products going to other states and Canada for processing. There were no incentives in

place to encourage minority or local contracting preferences. Commonwealth regulations currently restrict such considerations, and EOE might consider requesting limited authority to evaluate alternate contracting practices. This may suffice where public forest products are a small (though important) part of the overall market, rather than a dominant force.

Safety was seen by the evaluation team as something of a management void. Basic safety apparel like hard hats were rarely worn (or seen), and seatbelts were sometimes not employed. There was little awareness on the part of managers about safety performance except anecdotal recollections that "employee 'x' had a bad accident a few years back." Record keeping to track performance and trends is non-existent. Basic safety training is by osmosis not design. This does not suggest that performance is bad, only that the lack of any credible safety system makes it impossible to track performance and trends--indispensable information for managers.

DFW

DFW is seen as a small but elite and quickly improving organization--very focused on improving wildlife habitats, very knowledgeable, hungry to improve, with high morale. DFW has a good financial situation and an ambitious plan to achieve their vision.

DFW's contractor relations were good, and the evaluation team met several contractors at work sites who approved of DFW's administration of harvest contracts. Telephone discussions with other contractors corroborated this view.

Bidding for timber contracts is generally competitive. DFW normally uses lump sum sealed bids, which are viewed as fair and even-handed. This encourages an open market, with some products going to other states and Canada for processing. There were no incentives in place to encourage minority or local contracting preferences, and none anticipated. This may suffice where public forest products are a small (though important) part of the overall market, rather than a dominant force.

The team noted the same worker health and safety concerns as observed on MDC (see observations above under MDC)

DEM

The evaluation team sensed low morale, especially at DEM; much more notable because morale was so high at MDC and DFW. Some of this might be explained by a better financial picture at both MDC and DFW, plus a firmer picture of how they are achieving their respective visions as compared to DEM. DEM is also without a Chief Forester at present and it was well known that the recently retired Chief was disenchanted with the level of support DEM's Bureau of Forestry received at EOE.

DEM employs contract foresters and their rates are intended to mirror those of employees. These same contractors are subject to furlough but are not allowed to pursue other forestry related work. This policy is based on a ruling by DEM's legal staff in light

of the Commonwealth's Conflict of Interest Laws. Although the rationale for these restrictions is somewhat understandable, they appear to be regressive and not conducive to stability in the face of so much budget uncertainty.

Contractor relations were generally good, and the evaluation team met several contractors at work sites who felt that DEM's contracts were fairly administered. Telephone discussions with other contractors corroborated this view, however some strong minority negative opinions were registered. Bidding for timber contracts is usually competitive, but we encountered some contractors who refused to bid on contracts out of principle (perhaps based on a past issue). Lump sum sealed bids are normal, and viewed as fair and even-handed. This does allow for a very open market, with some products going to other states and Canada for processing. There were no incentives in place to encourage minority or local contracting preferences, and none anticipated. This may suffice where public forest products are a small (though important) part of the overall market, rather than a dominant force.

The team noted the same worker health and safety concerns as observed on MDC (see observations above under MDC)

EOEA Summary Assessment relative to the SCS criteria:

Strengths

In assessing employee and contractor relations within the department, the team observed the following positive attributes:

- Employee relations are excellent within MDC and DFW, much less so within DEM. There is a very strong sense of pride and commitment toward the work in which field staff are engaged.
- Employees exhibited dedication and commitment to the public and the forest resources they manage. While many stakeholders are quick to criticize DEM employee morale, it does not appear to affect the quality of their work (but see Table 9.A.3 and below for amount of work accomplished).
- The agencies are competitive in terms of wages and benefits, and benefit from strong competition for positions when advertised. However, DFW foresters work at a lower pay grade than they would for the same position in DEM or MDC.
- Many contractors are very satisfied working on agency contracts and prefer this work to other options. Many return year after year, providing stability in woods operations.
- The fact that most employees remain with their agencies for their entire career indicates a positive work environment.

Observations and Concerns

The evaluation team observed no circumstances to indicate that the agencies' relations with employees and contractors are in non-compliance with any fatal flaw requirement pertinent to this certification. However, the team observed the following negative attributes:

- Budget uncertainties and associated employment issues are having a negative effect on DEM employee morale.
- Worker Health and Safety (see observations above under MDC)
- There is a sense of frustration among DEM forest management staff that they get “lost” due to the higher profile of other Bureaus with the Division of Forests and Parks.
- Little or no consideration is given to preference for minority or local producers. Instead, contracts are awarded on a lump sum sealed bid competitive basis to the highest bidder
- The fact that most employees remain with their agencies for their entire career, while indicating a positive work environment, does make it difficult to implement positive changes in direction and diversify the staff.

From stakeholder comments, MDC is broadly viewed as a model agency -- extremely professional, efficient, businesslike, and energetic in achieving the goal of managing forestlands for quality water production. DFW is seen as a small but elite and quickly improving organization--very focused on improving wildlife habitats, very knowledgeable, and hungry to improve. DEM is broadly viewed as lacking focus, inefficient, doing a poor job of actively managing forestlands to accentuate their asset values, and making excuses rather than progress. The evaluation team found these stakeholder views to be credible, although we felt that characterizations of DEM were too harsh.

The lack of a good safety system and records made it impossible to determine if there were systemic safety issues, except for anecdotal assurances that there were few accidents of note. This is unacceptable for a modern civilian organization and does not serve the needs of the employees well, nor does it allow adequate management oversight.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
<i>82</i>	<i>95</i>	<i>98</i>

Condition DEM/DFW/MDC 2002.15

Within 1 year of respective award of certification, agencies must work with EOEA to develop and implement a safety system that includes performance measures, record keeping of injury rates, and costs for personal injury and vehicle accidents of Commonwealth employees.

C.6. Compliance with Relevant Laws, Regulations, Treaties and Conventions.

In this criterion, the evaluation team assesses agency performance with regard to compliance with all relevant laws, regulations, treaties and conventions. While subject-

specific statutory and regulatory compliance is addressed within several of the other criteria, the high priority placed upon lawful performance within the FSC P&C mandates a separate criterion within the SCS Forest Conservation Program framework. One aspect within the scope of this criterion is the legal standing of the forest management entity to harvest timber and otherwise take actions on the defined forest area, as well as the degree of compliance with state forest practices and environmental protection regulations. In addition, this criterion is concerned with the degree of compliance with federal environmental protection laws and regulations.

Findings and Conclusions:

The Commonwealth operates within a framework of state laws and regulations, as well as applicable federal laws. There is a tiered system of legislation creating each agency, and also legislation that authorizes the conduct of certain activities. The Code of Massachusetts Regulations (CMR) provides specific regulatory guidance for each agency. In addition, certain federal statutes like the Pittman-Robertson Act (providing reimbursement for wildlife habitat improvement) or Endangered Species Act (requiring identification and recovery of endangered species) apply to the conduct of forestland management activities.

Staff for each of the agencies were well aware of the applicable statutes. Because the statutes are so numerous, they will be considered by exception.

MDC

The evaluation team found no examples where MDC is violating laws and regulations. Staff knowledge was exemplary, as was the application in the field. Statutes were frequently discussed, and agency staff have a good working knowledge as well as a good attitude about application. They see themselves as responsible to lead by example. There is little historic or active litigation involving MDC projects.

DFW

Staff knowledge of laws and regulations was exemplary, as was the application in the field. However, DFW fails to adequately manage historic and cultural properties (see Section C.2). Other statutes were frequently discussed, and agency staff have a good working knowledge as well as a good attitude about application. They see themselves as responsible to lead by example. There is little historic or active litigation involving DFW projects.

DEM

DEM is clearly mandated by statute to produce management plans, although the statutes evidently do not specify any sideboards on these plans. Although DEM believes they are meeting the requirements of the Commonwealth statutes regarding management planning, we reiterate that their performance is nevertheless well below that expected of FSC-certified landowners. In addition, DEM fails to adequately manage historic and cultural properties (see Section C.2). Other statutes were frequently discussed, and agency staff have a good working knowledge as well as a good attitude about application.

One piece of evidence of adherence to laws and regulations is the frequency and nature of litigation involving the agencies. There is little historic or active litigation, although the team visited Wachusett Mountain ski area to gain an understanding of the issues involved in this current litigation. Discussions with both DEM managers and parties in the litigation revealed a principled disagreement that may need judicial resolution following several years of protracted but unsuccessful negotiations. It should be pointed out that the controversy surrounding the Mount Wachusett Ski Area expansion is not directly related to the conduct of DEM-BOF's forest management activities. The area was designated by legislative decree as a ski area and DEM was directed to administer its lease, for which DEM's Bureau of Recreation has the responsibility.

All agencies exhibited a good working knowledge of laws and regulations and actively seek to comply with them in management practice. The failure of DEM to complete current management plans is a noteworthy exception and must be addressed. The evaluation team observed no circumstances to indicate that the agencies' compliance with laws and regulations or tribal relations are in non-compliance with any fatal flaw requirement pertinent to this certification.

Scores, Conditions, Recommendations:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
85	95	95

There are no conditions or recommendations for this criterion

C.7. Importance Weighted Aggregate Score for Program Element C

Employing the PAIRWISE algorithm (described in the Forest Conservation Program Operations Manual), the evaluation team assigned weights of relative importance for each of the 6 criteria in this program element. Under SCS' accredited protocols, assignment of weights of relative importance is one means by which certification evaluations recognize and incorporate regional and sub-regional circumstances. In this case, the weights were designed to reflect the regional context in which the subject forest management unit is located: Commonwealth of Massachusetts. It should be noted that the assignment of weights of relative importance takes place independent of the performance evaluation. In fact, the weights of relative importance are assigned prior to the field investigations.

Criterion	Normalized Weight of Relative Importance
C1	0.250
C2	0.188
C3	0.250

C4	0.188
C5	0.063
C6	0.063

Applying these normalized weights to the six assigned performance scores (presented and discussed above) leads to a single weighted average score for the program element:

<i>DEM</i>	<i>DFW</i>	<i>MDC</i>
<i>84</i>	<i>88</i>	<i>91</i>

In that this weighted average scores for DEM, DFW, and MDC exceed the threshold of 80 points, overall performance with respect to this program element (financial and socio-economic considerations) is judged to be exemplary and certifiable.

10.0 APPENDICES

10.1 CHAIN-OF-CUSTODY

Products to be covered by the CoC certificate: Logs from all merchantable timber on DEM, DFW, and MDC properties.

With respect to DEM, DFW, and MDC, the chain-of-custody focus is on the “stump to roadside.” However, the overwhelming majority of sales are sold as standing timber. In the very few occasions where logs are sold roadside the chain-of-custody begins with the severing of a standing tree to produce a merchantable log and ends with that log(s) leaving the custody of the respective agency at the roadside.

During the fieldwork for the forest management evaluation, the evaluation team investigated the manner by which DEM, DFW, and MDC maintain chain-of-custody of the very small amount of timber not sold as standing stumpage.

COMMENTS RELATIVE TO THE FSC PRINCIPLES OF CHAIN OF CUSTODY

Principle 1: Documented control system

1.1 The company must have a clearly documented control system which addresses all the Principles of chain of custody control as specified below.

Although MDC, DFW, and DEM do have a system for marking logs that are sold roadside they did not have a readily available documented control system that details this. Thus Condition 2002.17 is issued:

Condition MDC/DEM/DFW 2002.17: Before selling roadside logs or other non-standing timber sales, as FSC certified, each agency must develop a written procedures

document that describes how the operation will meet the FSC chain-of-custody requirements. This document must address FSC's six principles for chain-of-custody certification, and must be completed as well as reviewed and approved by SCS.

1.2 For each Principle the documented control system must:

- 1.2.1 specify the personnel responsible for control;
- 1.2.2 provide examples of any associated forms, records or documents;

Comments: To be addressed by condition 2002.17

- 1.2.3 specify the correct requirements for completing any associated forms, records or documents;

Comments: To be addressed by condition 2002.17

Principle 2: Confirmation of inputs

2.1 The company must operate a system for assuring that inputs are themselves certified, if specified.

Comments: Not applicable as there are no certified inputs.

2.2 The system must include the following requirements:

- 2.2.1 when the company orders FSC endorsed products from its suppliers, it specifies its requirement that such products be covered by an FSC endorsed chain of custody certificate;
- 2.2.2 when the company receives FSC endorsed products from its suppliers, it checks the invoices or accompanying documents to ensure that the chain of custody certificate registration code and expiry date are quoted;
- 2.2.3 if the company is in doubt about the validity of the chain of custody certificate registration code, the company checks its validity with the issuing certification body or with FSC.

Comments: Not applicable

Principle 3: Separation and/or demarcation of certified and non-certified inputs

3.1 The company must operate a system for ensuring that when certified inputs are received they be clearly marked or otherwise identified as certified.

Comments: Not applicable

3.2 Certified inputs must remain easily identifiable as certified throughout processing or manufacturing. This may be achieved by:

3.2.1 physical separation of certified and non-certified production lines;

Comments: Not applicable

3.2.2 temporal separation of certified and non-certified production runs;

3.3 If certified and non-certified inputs are mixed, reliable data must be recorded which allow an independent assessor to confirm the volumes and/or weights of certified and non-certified inputs, over a specified production period.

Comments: Not applicable

3.4 The outputs of processing or manufacturing of certified forest products must be clearly marked or otherwise be identifiable as certified.

Comments: Not applicable

Principle 4: Secure product labelling

4.1 The company must operate a secure system for the production and application of product labels.

4.2 The company must accept legal responsibility for ensuring that the FSC Logo Pack issued to the company is not used by any unauthorised users, or for unauthorised uses.

4.3 The company must operate a system which ensures that only its own certified products may be labelled with the FSC name, initials or Logo.

Comments: To be addressed by Condition 2002.17

Principle 5: Identification of certified outputs

5.1 Certified products must be labelled or otherwise be identifiable in a manner that labels do not become detached during storage, handling or transport.

Comments: To be addressed by Condition 2002.17

5.2 The company must operate a system that allows any product sold by the company as certified to be linked to the specific sales invoice issued by the company.

Comments: To be addressed by Condition 2002.17

5.3 The company must operate a system to ensure that all sales invoices issued for certified products:

- 5.2.1 include a description of the product(s);
- 5.2.2 record the volume/quantity of the product(s);
- 5.2.3 quote the company's correct chain of custody certificate registration code and expiry date.

Comments: To be addressed by Condition 2002.17

Principle 6: Record keeping

- 6.1** The company maintains appropriate records of all inputs, processing and outputs of certified products.
- 6.2** The records are sufficient to allow an independent assessor to trace back from any given certified output to the certified inputs.
- 6.3** The records are sufficient to allow an independent assessor to determine the conversion rates for the manufacture of certified outputs from given certified inputs.
- 6.4** Records are maintained for a minimum of five years.

Comments: To be addressed by Condition 2002.17

CERTIFICATION CONCLUSION AND RECOMMENDATION

The overwhelming majority of timber sold by the agencies is sold as standing timber, with roadside sales being the one exception. Thus, the risk of contamination is extremely low. The team observed appropriate protocols in place to assure that there is not contamination of the certified supply. In addition, Condition 2002.17 will result in the agencies documenting these procedures and strengthen compliance with FSC Chain-of-Custody guidelines.

Thus this FM/COC certification evaluation, concludes that the chain-of-custody procedures meet the FSC Principles of Chain-of-Custody. Accordingly, award of CoC certification covering “stump to roadside” is warranted.

10.2: PEER REVIEW COMMENTS & RESPONSES FROM THE SCS TEAM

TO: David Wager, Scientific Certification Systems

FROM: Thom J. McEvoy, Assoc. Prof. & Extension Forester, School of Natural Resources, University of Vermont, as 'Peer Reviewer.' /s/

Regarding: Forest Management Certification Evaluation on the Natural Forests (sic) managed by the Commonwealth of Massachusetts: Draft Report dated April 2003.

Although I am very familiar with the concept of 'green certification,' and generally knowledgeable of the review process and procedures of the principal third-party contractors employed by the Forest Stewardship Council, I have never participated in a review, nor have I been asked to comment of a draft report. For these reasons, I have appended copies of recently published articles of mine regarding the subject of forest certification from a few different angles that may expose biases I bring into the process. I have attempted to set these biases aside during the considerably lengthy process of reviewing what I perceived to be the most pertinent documents: 1) The Final Interim Standard for State Forestlands in Massachusetts; 2) SCS Program Description and Operations Manual; 3) Forest Management Certification Evaluation on the Natural Forests Managed by the Commonwealth of Massachusetts - draft of April 2003; 4) Correspondence from Dave Wager to Bob O'Connor dated 12 April 2003; and 5) Forest Management Certification Evaluation on the Natural Forests Managed by the Commonwealth of Massachusetts - draft of November 2002 with comments from EOEA agencies. I also spent a few hours researching information available on-line, mostly about the Quabbin, but also on the subject of MA public forestry and forestry in general in the Commonwealth. I was tempted to contact a few MA colleagues with questions, but decided that doing so was inappropriate.

Most of my comments relate to item 3, above; the current draft report. Although I had thought the earlier draft with EOEA comments (item 5, above) would be very helpful in my analysis, after leafing through the electronic copy (and converting that copy to paper), I decided it might be inappropriate to use the client's comments in forming my own opinions. Virtually all of my comments focus on the April draft report, but I think it is significant to note that EOEA offers some important comments about the review process that SCS should note and consider incorporating into future public-agency reviews.

I have always been of a mind that one of the most important aspects of forest certification is that it is -- first and foremost -- an educational process for the client. Since the expectations of an entity that seeks certification are based on what it perceives is an alternative future that is likely to transpire, the 'acid-test' is *intent*. In other words, a manager who wants to embrace the principles of certification and abide by the practices that make this so, is looking to the 'review' or 'audit' as a roadmap; a set of guidelines that define acceptability. If this is true, the reviewer's job is to create that roadmap, identity the bounds of 'acceptability,' and carefully interpret and evaluate a client's intent. In this context, the degree to which a client is willing to adjust operations to meet FSC guidelines is more significant than the practices that are currently on the ground. This is my interpretation of FSC certification and not likely to have much influence on

those who have been far more involved in the process than I have, but this is the ‘tint of the glasses’ through which I review the current report.

I have not reviewed any other reports, so I have no basis for comparison. The style of writing, however, is cumbersome and overly officious. Often the report lapses into ‘passive voice’ to create the appearance of objectivity and distance. But the effect on the reader is numbing. For example (and the only example I will offer, although passive voice is used throughout the document), from section 1.1 on page 4; “As elaborated upon later in this report, the certification evaluation team observed circumstances and resource conditions than can be clearly characterized as....”; should be stated in ‘active voice’ as follows: *The certification team, as it notes many times later in the report, observed circumstances and resources conditions it would characterizes as...* The second sentence in the same section is also easily converted from passive to active voice, as is the case throughout the document. Incorporating language that changes passive to active voice not only shortens the document, it clarifies meaning and makes the document more reader-friendly.

Also, despite the fact that contemporary media and many public figures use the word ‘impact’ as a transitive verb, most often the context is intransitive. In other words, ‘impacted’ is used as a verb that stands alone without an object. Except in reference to dentistry, the word is most commonly accepted as a noun. See <http://dictionary.reference.com/search?q=impact> for an explanation. This is a difficult call because, technically, using the word impact as a verb is not incorrect, primarily because it has become so over-used by politicians and report writers. It is, however, grammatically clumsy and a point that has always troubled me in contemporary writing; that we would accept an intransitive verb when the meaning is usually one that is better suited using the word as a noun. I propose you change all instances where ‘impact’ is used as a verb, to a construction where ‘impact’ is used as a noun. For example, on page 58, first paragraph: “...losses, that would negatively impact water quality;” to the following: *...losses, that would have a negative impact on water quality.*

One other comment about the writing. I would prefer to see the report stated in a more narrative style, using carefully worded statements to describe a condition or circumstance rather than citing the ‘section and chapter’ that applies. In other words, tell the client exactly what the team has discovered in the review, and then reference the statements directing the reader to the pertinent standards listed in an appendix. So, for example, DEM’s lack of a comprehensive management plan for its lands creates a ‘pre-condition’ that it must satisfy before certification. I know this sounds overly simplistic, but unless I am mistaken, it is correct and it sufficiently informs the client who will then most likely look up the precise details of their failing in the appendix. An approach such as I describe would result in a 35-page informative report with 100 pages of ‘appendix’ rather than a 135-page report that is very difficult to read and digest.

Specific, page-by-page comments are as follows:

On page 4, the bulleted information under item 1.0 does not match with the report title.

Response: Changed to “commonwealth”

On top of page 5, which is a paragraph that continues from the previous page, the wording is virtually incomprehensible. I think I understand what the author is trying to say, but the construction and wording is confusing.

Response: re-worded

Page 6 is absent from my copy.

Response: corrected

Page 7 -- Table 1.1.1 - Virtually every item listed as a strength is countered with a weakness, so much so that it dulls the validity of either. Also, I can't understand why the agencies failing to recognize FSC Principles and Criteria is a weakness. Perhaps they have better idea, or the principles are something they want to understand and aspire to?

On page 8 -- A lack of marked boundaries is listed as a weakness. Virtually every property boundary in the original 13 colonies is in error due to a 'fatal flaw' of the metes and bound system of survey: every property has its own reference points. The only way to resolve boundary disputes is with the use of 'quit claim deeds,' an alternative that is usually both time consuming and expensive. I would encourage public agencies to develop a policy that, in effect, allows it to 'quit claims' to abutting owners, for the purposes of resolving boundary disputes. But this will consume both time and money. Since the condition is pervasive in the eastern U.S., I suggest FSC revise its guidelines.

Response: Noted

On page 9 -- The report makes a comment about DFW and DEM not taking seriously enough its obligation to manage cultural and historical resources, yet I could not locate anything later in the report to back this up. Also, if this is a serious concern of FSC, I should think it would want to understand the circumstances under which lands were acquired to form the Quabbin. Were the rights of any owners denied when the Quabbin was flooded?

Response: The recommendation that DFW and DEM improve in management of cultural and historical resources resulted from consultations with stakeholders and review of planning processes that failed to explicitly detail how these resources are safeguarded.

On page 10 -- Why is timber processing in northern New England and Canada a 'weakness' of the agencies?

Response: This is a relatively minor weakness because FSC strongly encourages local processing of timber and the team did not see efforts by the Commonwealth to encourage this.

On page 14 -- I am surprised there is no mention of the environmental impacts resulting from flooding of the Quabbin. There did not appear to be any attempt to ascertain the possibility of water quality problems that may result from an undiscovered hazardous waste source on the bottom of the Quabbin. I don't doubt that all precautions have been

employed by MDC officials. But what happens if an undisclosed hazard begins to leak causing serious health problems for water users and it is coming from lands that have been 'certified' by FSC? I should think FSC would want MDC to give it assurances there are no 'time bombs' on the bottom of Quabbin Reservoir.

On page 17 -- There is mention of DEM not planning for lands where sales are taking place. It is hard to evaluate this statement, because there must have been some planning in advance of a timber sale. Is this a question of scale? In other words, the district forester had a plan, but it was not part of a plan filed with the main office in Boston. From FSC's perspective, I'm guessing local planning is far more important than agency-wide planning.

On page 20 -- MDC has no plantations? This is surprising since it was common in the early 1900's to plant conifers on open lands around reservoirs. Perhaps I don't understand the context.

Response: Planted tree stands do not automatically qualify as plantations. In the case of the Commonwealth these planted stands are managed in a manner (e.g. longer rotations, thinning) that encourage natural forest conditions.

On page 22 -- In the second paragraph under section 1.2, the wording is virtually incomprehensible. In the table on the same page, I question the location of the 'pre-condition.' If the agency is cutting only a small fraction of its inventory, is the fact that they don't know it a risk to 'sustainability.' Also, I'm guessing there is planning at local levels where prescriptions are implemented, but the planning is not part of a centralized process. It must be a very serious lapse to deny certification when the agency is erring on the side of inaction rather than cutting with abandon.

Response: Re-worded second paragraph. The lack of management plans, regardless of harvesting intensity, triggers non-conformance with an FSC Principle.

On page 23 -- Simply state that it is a lack of forest management planning that has created the precondition for DEM. Much of the first full paragraph is superfluous.

Response: 1st paragraph discusses results of other agencies, thus not superfluous.

On page 24 -- DEM preconditions; I would suggest that the three agencies come up with a planning protocol that fits all. Item 1. c) Allowable cut calculation and 'age-driven yield curves' apply to even-aged (or even-structured) stands, yet the team recommends 'restoration' strategies that move structure in the direction of uneven-aged forests. This is a serious contradiction.

My suggestion is to use very simple 'area-regulation' methods (total acres divided by average rotation age equals number of acres to treat each year) and revise every ten years, due to changing markets, technologies and trends. Any long-range forest planning process must seriously consider the prospect that forests may one day be too valuable to harvest. An engineered substitute for wood that is easier and cheaper to produce may completely obviate the current trends in wood consumption. Also, what if the citizenry of the Commonwealth decides that public forests are more important as reserves than as

sources of fiber? The expense and effort of modeling forest growth for the purposes of utilization are questionable given the prospects of a future that will not use wood fiber the way we do now. Specific silvicultural practices should be determined at local levels, not in Boston.

Response: The term “age-driven” was not meant to imply that all stands are and will always be single-aged. The important point is that they must account for the present age structure of the forest, which is presently dominated by aging, single-aged stands. The wording change clarifies this point.

On page 25 -- Condition DFW 2002.3 -- Be more specific; a ‘stocking survey’ is considerably easier and cheaper than volume and value estimates. Condition DEM/DFW 2002.5 -- I believe the agencies should have points of access documented, but I’m not convinced it needs to specifically reference ‘timber management.’ The agencies should also identify landings and other permanent, or semi-permanent openings.

Response: A simple stocking survey would not be adequate for the purposes completing plans as mandated by condition 2001.1. Statement changed to “forest” management “and harvesting” to clarify broad intent We agree that the agencies should identify landings and other permanent openings, but this does not need to be specified as it is something that will come from better mapping and use of GIS.

Condition DEM/DFW 2002.7 -- The correct site address for this document is: www.proforest.com (not ‘org’). I reviewed this document and did not find it to be especially helpful for delineating areas to conserve. I suggest the agencies come together and develop their own protocol. There is a great deal of talent in MA that can be tapped to do this. In fact, it would be a great project to involve students.

Response: Report has been changed from www.proforest.org to www.proforest.com

On page 26 -- As mentioned earlier, conditions involving boundaries are likely impossible to resolve because of the prevalent system of survey used in the region. Instead, I would suggest the agencies come together and develop a protocol to resolve boundaries (as described earlier). Also, the condition should not apply to sale areas that are well within property boundaries. The conditions having to do with illegal access to state land trails are verging on ridiculous. This is a perennial problem for any owner of extensive properties, and the client should not be penalized for the illegal behavior of others, so long as the client is taking steps to curb the behavior.

Response: Condition has been reworded to alleviate the challenge of marking disputed boundaries. The Team believed an exemplary forestry operation could do more to try and prevent illegal activity.

On page 27 -- Condition DEM/DFW 2002.16 -- The agencies should discover the extent to which citizens of the Commonwealth want to protect historical resources, and based on this feedback, the agencies should develop a protocol for protecting sites of historical significance.

Response: Noted

On page 28 -- I'm reasonably sure the 'USA PATRIOT Act' applies at some level and should be added to the list. Someone at SCS should review the act as it is wide-reaching (to a frightening degree!).

On page 30 -- section 3.3.2, second line; the way it is written, it is contradictory. Also, I am not familiar with the term "group shelterwood," and I'm assuming the term "group selection systems" is referring to the system of regeneration that eventually results in uneven-aged forests. The 'shelterwood' system results in even-aged forests, so there is a discrepancy of terms. If the team is endorsing allowable cut calculations, the reader must assume the overall objective is to maintain even-aged (or even-structured) forests. This paragraph is contradictory with earlier recommendations.

Response: wording changed in 3.2.2 to agree with text in A.2 Background. Group shelterwood has long been included in Smith's silvicultural text and other standard references, though its use has certainly grown in the past decade. We certainly do not intend to enforce single-aged silvicultural systems via the condition requiring an AAC calculation as suggested by the reviewer. Existing wood-supply models can readily accommodate any silvicultural system regardless of stand age structure as long as time-driven yield curves can be formulated for the strata under management. Wording changes to Precondition 2002.1 hopefully clarifies this linkage more clearly.

On page 31 -- section 4.0, given the client owns and manages lands as a public trust, I would have expected the team to spend more time discovering just how important the lands are to the people who use them and to residents of the Commonwealth.

Response: Conducting any broad scale surveys about how important lands are to the people of Massachusetts was beyond the scope of this evaluation. However, the team spent considerable time soliciting and considering comments from a full range of stakeholders.

On page 35 -- section 6.2, as those on the team well-know, if this were a scientific study, the sample size reported here would allow 'one degree of freedom.' Thus, the valid sample size would be zero! Written comments from one stakeholder are completely meaningless as a representation of the general beliefs of stakeholders. Although not the fault of SCS or the team, it is appalling that only one person provided comments. No decision in this report should be based on such limited public involvement.

Response: Table 8.3.1 shows that 67 people provided comments regarding this evaluation. The reviewer is referring to the paucity of comments on the SCS draft interim standard, which is not uncommon in certification. Fortunately, the draft interim standard was largely based on the FSC Draft Northeast Regional Standard, which was developed through an extensive multi-stakeholder process.

On page 36 -- section 7.0 -- I was surprised there was no aerial reconnaissance to facilitate the review of such a large and diverse landscape. In my estimation, aerial survey should be a standard procedure for all public lands, and for holdings larger than 2,000 acres. The section reports 100 'consultations' during a two-week period, yet the list of contacts on pages 44 - 50 indicate that only 67 people participated out of 162 possible cases. The 'itinerary' of the field visits (pages 36 - 42) were of no use to me as a 'peer reviewer.' I would have expected more detailed notes since it is at this level that practices are implemented, and it is primarily at this level where SCS should investigate its concerns about management.

Response: Comment about Aerial review is noted and will be considered for future evaluations. Regarding consultations, the "100 individuals" includes some brief talks with agency employees that are not listed in Table 8.3.1.

On page 52 -- I question the validity of 'stakeholder' comments given earlier observations about the lack of involvement. As a reviewer, this simply looks like SCS finding public comments to support its conclusions about the agencies. And, I don't believe that many of the comments clearly support the 'SCS Response or Perspective.' Given the lack of public involvement, it is this section that is the weakest of the report. To the careful reader, it looks almost contrived. My suggestion is that SCS either downplay public support for its findings, or it put more effort into obtaining a meaningful cross-section of opinion. Having said this, I don't think the client should be made to wait for certification decision.

Response: 162 stakeholders, from a wide range of interests, were contacted in this evaluation. The responses detailed in this report are by no means contrived and we disagree with the reviewer about downplaying the public involvement. In fact, we received almost identical comments (e.g., no management plans on DEM, lack of public involvement process) from numerous different stakeholders, thus indicating the 67 respondents was a sufficient number. The fact that the SCS team's conclusions and stakeholder comments are consistent indicates accuracy of team's findings and that the team appropriately followed evaluation protocols to consider these stakeholder comments.

On page 57 -- section A.1 Timber Harvest Regulation. I don't agree with the first statement: "The landowner's harvest regulation strategy is arguably the most important criterion assessed in a certification evaluation, because it governs the timber sustainability for the enterprise (sic)." What is far more important is the way a client treats the land. In large enterprises, it is necessary to understand yield, but not to the extent that it controls everything else. There is a distinct possibility that the people of the Commonwealth are not as fixated on timber as we think they should be, but in the final analysis, it is the goals and objectives of the 'owner' that determines the extent to which a given forest management plan invests in timber production. For example, harvesting should always be done within the context of an objective, and the prescription (and marking guidelines) should always have a feedback loop to ascertain success or failure. I don't believe it is necessary to know the exact proportion of 'allowable cut' to effect this

type of local planning, especially when timber is subordinate to other resource values which is apt to be the case on public lands.

Response: noted

On page 58 -- The top paragraph describes a fairly aggressive timber harvesting schedule. If I understand the wording, the goal is to create a structure composed of three groups (age 0 - 30 years; age 30 - 60 years; and greater than 60 years). With a "30-year cutting cycle" this means that, theoretically, MA will one day never see a tree older than 90. This is an extremely aggressive schedule, far more so than I would have guessed FSC would think appropriate. I would propose foresters figure rotations (a term, incidentally, that applies to 'even-aged forests,' not the all-aged structures that the agencies want to achieve) based on species, site quality and risk. For example, northern red oak is given a standard rotation of 120 years; on a 'good' site, the rotation is 150 years; on a 'poor' site, the rotation is 90 years. The 'risk' element (primarily from what I call 'rain-wind' events, the remnants of hurricanes) will shorten a rotation in proportion to risk. The presence or absence of 'pitt-and-mound' topography is a fairly good indicator of risk, and I'll bet that most agency foresters know exactly which stands are most at risk.

By applying this simple guideline, it makes no difference if the manager chooses to grow trees in even-aged configurations or uneven-aged; when a tree reaches its rotation age, it is a candidate for harvest, excepting mitigating circumstances.

Regardless of the system, it is far more important how managers effect management on the ground than the extent to which a given practice fits into a larger scheme. Again, the agencies must consider two things: 1) Does the public really want its lands managed for timber?, and 2) It is distinctly possible that wood will be replaced by a biologically engineered product -- probably within the next 50 years, but certainly within the next 100 years -- that will completely obviate our use of forests for fiber production. It is not too soon (in forest time) to start planning for this dramatic turn of events.

Response: The reviewer has drawn the incorrect conclusion that the >60 cohort will have no trees >90. This is not MDC's intent, as we understand it; the concept actually will allow old-growth-like structures to develop on this oldest third of the forest. While this oldest cohort may be partially harvested, it would not be totally regenerated by age 90 (unless a catastrophic windstorm does so).. In any event, this condition is at least 50 years in the future, since MDC has only been harvesting under this plan for 10 years. We deem this to be sufficient time to formulate more specific silvicultural systems for these old stands, assuming they are not destroyed by the next hurricane by then. We added a sentence in the description of MDC's silvicultural systems to clarify the fate of the >60 cohort and hopefully avoid inferences that management does not plan to

On page 59 -- I disagree with the statement: "...if the goal is stable long-term forest age structure for purposes other than even-flow of timber (sic), then the consequences of under-harvesting are potentially as severe as over-harvesting."

Timber harvesting is a means of manipulating forest succession to achieve human benefits. The only consequence of 'under-harvesting' is lost yield -- a human benefit. I

don't understand how one could argue that an 'old' forest is not sustainable if one of the goals is restoration. In pre-settlement MA, the youngest, sawtimber-sized stand was probably twice the proposed rotation age (somewhere between 60 and 90 years) of the current plan. It is misleading to suggest negative ecosystem consequences for a strategy to harvest substantially less than the mean annual increment (a common point in stand development that is used to figure 'annual allowable cut'). SCS should encourage the client to seek broad public involvement to discover the expectations of the people for whom the lands are being managed in trust.

If the client were a publicly-held corporation, I might agree that there is a fiduciary responsibility to shareholders to make assets as profitable as possible. But such is not the case with public assets.

Response: One clear example of the validity of our statement as written is the desire to maintain some early successional habitat. Although young stands may be sporadically created by natural stand-replacing disturbances, ensuring that they are dependably represented requires a disciplined amount of regeneration cutting. A clause was inserted in this section to add this example.

On page 60 -- A lack on 'units' in the table make it impossible to read. Also, what is the source of the per-acre volumes? Except for white pine stands, the volumes are more than twice what I would expect to see (especially in 'young' stands, as cited earlier in the report). In fact, the 'calculated AAC' includes volume figures that look far more reasonable (which is scary, because this is the amount to be cut in a year!). Did the team verify the validity of the tables? Did the team do any inventory? Or did it rely solely on agency data?

Response: "units" are on each column heading, so we do not understand the first comment. We did not do any inventory ourselves; these data come directly from the agencies. The per-acre figures are simply the quotient of the first two columns.

On page 62 -- In the first paragraph, MDC is lauded for a cutting cycle of 50 years. I'm confused by the term, since 'cutting cycle' is usually defined as "the interval between harvesting operations when uneven-aged methods are employed using group- or single-tree selection." I think the term -- as used in the report -- means it is 50 years between stand entries, but it is not clear.

Given the team's perspective on timber production, it is a contradiction to list "...extraordinarily conservative, to the point where under-harvesting is the main concern." as a strength.

Response: We specifically define the "effective cutting cycle" in the previous paragraph as analogous but slightly different than the inference drawn by the reviewer. No particular silvicultural system is assumed here; this is merely the area owned divided by the area cut per year, like a natural disturbance interval. It is not accurate to characterize the team as having a "perspective" on timber production; this section is merely recounting agencies' performance relative to SCS and FSC criteria. Relative to the SCS criteria that focus on OVER-harvesting, the conservatism is indeed a strength.

On page 63 -- Lack of units in table.

Response: *Acres added to the table*

On page 64 -- In the first bulleted paragraph, why propose constructing 'stand-level yield curves' embedded into a forest-level harvest simulator, when the agencies are attempting to convert stands to uneven-aged structures? In the second bullet, I raise the question: Is this level of control necessary for state lands that may not hold timber as its most important investment? If timber production is not the most important resource, the agencies require substantially less data for decision-making.

Response: *As noted in an earlier comment, there is no inconsistency in having stand yield curves for a strategy that is converting the forest to more diverse structures. An editorial change was made to clarify this point again here. Regarding the "level of control" issue: this is really one that the agencies themselves have stated, especially DFW and MDC which both have very specific target age structures. So, we are not mandating some sort of control, but rather, assessing performance relative to goals established by the agencies themselves (which we believe are reasonable).*

On page 65 -- I would submit that the last line in the top paragraph is a strength, not a weakness. Decisions should be effected at local levels, not centrally. I disagree with penalizing the client for not instituting a top - down management style. And, of course, I disagree with the statement in the first bulleted paragraph: Sure, model the situation from the top - down, but remember, a model is a simplification of reality -- sometimes an oversimplification. Managers must be allowed to make decisions on the ground, where reality is not always so simple.

Response: *We believe there is an important difference in managing everything as if it were a series of unrelated woodlots and managing an entire, large, landscape-level forest. No one, least of all us, is suggesting that silvicultural quality should be somehow compromised by a top-down management approach; merely that excellent silviculture, by itself, is distinctly NOT forest management, which is what criterion A.1 is about. Intelligent, resource- or forest-level modeling, emphasizing forest structures for ALL purposes, gives stand-level silviculture the critical context it needs to assure it is accomplishing a goal that is greater than the sum of the parts (i.e., stands).*

On page 66 -- Under 'DEM,' Is "lacking of a strategy" substantially in breach of principle 7? In the second paragraph, same section; I believe the agencies have a responsibility to communicate policy to field staff, and to make sure everyone understands the goals and mission of the organization, but a top - down approach in forestry, especially where the client is proposing to shift from even-aged to all-aged systems, is a prescription for failure. A fundamental principle of silviculture is that 'management' happens at the 'stand' level, and the collective management of stands is forest management. I would accept the judgement of a knowledgeable and well-informed person on the ground over that of a statewide 'model' any day. Sure, the

modeling is necessary to embrace a larger context, but use the output to inform managers, and trust their judgement to make good decisions on the ground.

I completely agree with the sentiment in the last paragraph on page 66, hopefully without appearing to have contradicted myself. I think there are huge benefits that will come from a joint planning strategy for state agencies. Most important of all (and it surprises me not to see it in this report) is a simple mission statement that every employee understands and can quote to someone, as a friend of mine used to say, “during the time that it takes for the elevator door to close.”

On page 68 -- In the second paragraph, there is no mention of comparing outcomes to original objectives. In my estimation, this is the heart of good silviculture and the primary difference between cutting trees and good forestry. Table 9.A.4 lists mostly regeneration practices, which I find surprising since earlier in the report MA public forests were described as “pole and small sawtimber stands.” I would expect to see far more intermediate treatments. Also, the wording is confusing; for example, I don’t understand ‘Group or Irregular Shelterwood Cut.’ And, if the client’s goal is to convert stands to more uneven-aged configurations, this is not the type of silviculture one would expect to see. The ‘shelterwood’ system has an infinite variety of alternatives, but unless the user explains the intent, it is impossible to judge suitability.

On page 69 -- Problems with silvicultural terminology.

Response: Not sure what “problems” are being alluded to?

On page 70 -- In the first paragraph the team has offered an opinion on ‘Q-factor’ (as “appropriate”) without briefly explaining to the reader what it is and its significance. ‘Q’ is the ratio of the number of trees in a diameter class to the number of trees in the next higher class. A ‘Q-factor’ of 1.2 means -- for example -- that there are 20% more trees in the 10-inch class than in the 12-inch class. The problem with using ‘Q-factor’ is that it is rarely a consistent ratio from saplings to sawtimber. Under “strengths,” it is hard for me to accept an assessment of “high-caliber” without a means to compare objectives with outcomes.

What is “enrichment planting?”

The fifth bullet under “strengths” is a contradiction with earlier comments. For example, the type of silviculture lauded in this section is contrary to a ‘top - down’ approach and allowable cut modeling mentioned earlier in the report. The statements under this bullet do not jibe with earlier comments about ‘control.’

On page 71 -- First bullet under ‘Observations and Concerns,’ Is the problem with the ‘marking guideline’ (articulation of the ‘prescription to facilitate marking in the field), or does it have something to do with the way contractors are implementing the prescription. Perhaps the client needs to develop a standard ‘marking guideline’ form to be used with contractors? Under the third bullet, the team comments that ‘even-aged’ structures are

“unnatural.” The pre-settlement forest was most likely a mosaic of ‘even-aged’ gaps of varying sizes, from a few acres to many thousands of acres. The term ‘even-aged’ is a construct that does not always fit the circumstances.

Response: noted

On page 72 --- The first line under ‘Summary’ is what should be of primary importance in an FSC certification; but this is my opinion.

Response: Noted

On page 74 -- The client is to be commended for not attempting an ‘active’ strategy that could have long lasting negative ecological impacts. The adelgid will eventually become non-lethal, and the best strategy -- until more is known -- is salvage. When chestnut blight arrived in the region, owners were advised to clearcut healthy stands to act as a barrier. This proved to be a fatal strategy and may have caused the pathogen to move more quickly than if stands had been left alone.

On page 76 -- 3rd bullet; I would not advocate establishing access except within the context of planned activities. New construction may not be necessary under future management regimes, 50 to 100 years from now. Also, ‘inventory of access’ may be more appropriate at local levels. In other words, access is catalogued at district offices rather than in one location. ‘In-kind’ payments for roads (usually as stumpage concessions) are not uncommon in the region.

Response: Noted

On page 78 -- In the section under ‘harvesting efficiency,’ the lump-sum sale is the most risk-free (to the seller) method of selling timber and it is not uncommon on public lands. Although the policy of always accepting the highest bid is suspect, the method of sale is a sound one. I have included an article of mine that discusses different timber sale options and describes the advantages of lump-sum. When properly implemented, it should not cause supervision problems. One of the most distinct advantages of the system is that it forces the buyer to use sound utilization practices, in order to maximize timber values. The lump-sum sale is the primary method of sale that I’ve been advocating in Vermont and in the region for the past 25 years. (See attached article)

Response: Noted

On page 86 -- Under item B1., second paragraph, item 6: NO exotic species, whatsoever. The state should also have a policy about moving planting stock within the state. I’ve seen the impacts of unbridled use of exotics on the Hawaiian Islands and elsewhere.

Response: Noted, SCS will investigate during subsequent surveillance audits

On page 110 -- I would argue that acquisition should take precedence over management, and it is always preferable to err on the side of inaction.

Response: Noted

On page 113 -- The last bullet at bottom of page; public input should be the driving force behind management decisions, not resource conditions or financial demands. I'm surprised the state does not have a well-defined public involvement process (or maybe it does, but the team did not pick up on it). Public forest lands are a people's legacy for the future. If this is true, the public should have a hand in making decisions.

Response: The Team did not see an effective public involvement process, and numerous stakeholder expressed the same concern.

On page 114 -- I'm troubled by the observation that DEM can raise money by cutting more timber. Too often timber is made to pay the bills and this is a dangerous policy for a public agency to set in motion. If MA residents were asked the extent to which they would like to see forests harvested to raise money to improve the management of forests, I suspect most would be appalled. Yes, timber is an asset, but for a state agency, only after it has served a silvicultural function.

Response: The suggestion here is not to make DEM harvest timber to make money. Rather, generation of revenue is an indication of sustainability and management integrity. Liquidation of forest assets and doing nothing lie at two extremes of forest management; neither is an appropriate strategy for public agencies. Our assessment revealed that DEM is realizing relatively little from a highly valuable, productive, and resilient asset. Most public forestry agencies struggle with adequacy of budgets, thus DEM could improve its capacity to manage for the entire range of forest health and values by demonstrable results like improving revenues -- but not simply for the sake of making money off forest lands.

On page 116 -- Under 'public involvement,' I would have interpreted this criterion differently than the team has. In my estimation, it is a comment on the extent to which residents of the Commonwealth have a say in how forests are managed. I did not see much evidence of public involvement in the report so I have to assume that the client does not have a well-defined process to involve the public in decision-making. For a public lands manager -- if this is true -- it is unacceptable. The lands belong to the people, not the agencies.

Response: noted

End of report comments:

Peer Review Comments
Draft SCS Forest Management Certification Report
Commonwealth of Massachusetts

Submitted by Charles Thompson, Pelham, MA , April 2003

General Remarks

The report is clear and detailed in describing the evaluation that was conducted, the criteria that were employed, and the data that were collected.

The report conveys the basis upon which the scoring decisions were reached.

The scoring system is well-explained. Although the concept of importance weighting is summarized, the rationale for the specific normalized weights for each program element does not appear to be part of the report. A short explanation would be helpful.

Comments by Section

The description of the administrative context (2.0) is adequate. A number of the intra-secretariat (EOEA) issues that influence budgets, the culture of each agency and ultimately the quality of state lands management are mentioned at various points throughout the document. A concise summary of the administrative and political context at the level of the secretariat might be helpful. Such a summary would include a simple organizational diagram.

Summary information on the Forest Management Enterprise (3.0) is adequate and appears to be accurate. It would be helpful to note the number of properties or forests, as well as total acreage, that make up the landholdings of DEM and DFW. The fact that these agencies hold title to many properties scattered across the state is mentioned, including acreage summaries by region, but the numbers of properties would be useful to emphasize the logistical challenges involved in achieving the goal of improved management.

Response: number of properties added to the report.

Is there an inconsistency between the following two statements:

(3.3.2) "In general, these agencies silvicultural systems incorporate an appropriate balance between single- and multi-aged structures..."

((9.A.2 (Background)) "...silvicultural practices on all EOE lands are dominated by single-aged systems or variants thereof")

Sites Evaluated (7.0). The number, type, and geographical range of sites evaluated were representative and more than adequate for gathering sufficient information to enable a fair assessment. Sites were fairly distributed among the three agencies; a sufficient number of personnel was consulted.

Stakeholder Consultation (8.0). The definition of stakeholder was inclusive. The effort to contact and solicit comments from a wide range of interested parties was thorough.

9.0 Findings

A.1 Timber Harvest Regulation. I agree that regulation strategy is a critically important criterion in any certification assessment; I agree also with most of the specific observations made relative to each of the agencies. (I am least knowledgeable about the specifics of DFW's program and methodology). However, I am uncomfortable with the consequences of the conclusions reached as a result of the analysis – specifically with the differences in score between DEM and DFW. My misgivings/ confusion originate from the following quotes taken from the report:

- For both agencies, "there appears to be little connection between the nominal forest regulation strategy and on-the-ground harvest activity".
- DFW's strategy bears "no obvious relationship to the agency's forest structure goals as outlined in the ... Guidelines document".
- "comparison of DFW's newly derived targets with recent activity reveals a large mismatch"
- "DEM's forest regulation strategy effectively exists only on paper, not in practice, ... does not warrant a certifiable score for this criterion"

I understand the reasoning leading to the requirement for a DEM precondition, but do not understand why the described deficiencies do not result in a precondition for DFW.

I agree wholeheartedly with the "top down" vs. "bottom up" discussion and with the urgent need to develop a "custom analytical framework that can be shared and used by all agencies". The opportunity for efficiency and improved statelands management through greater communication, coordination, resource and skill sharing among the three agencies is enormous in Massachusetts.

Response: The lack of a wholly consistent harvest regulation strategy is not, by itself, the reason for the precondition on DEM; rather, it is the lack of this and many other important parts of a forest management plan. DFW was significantly farther along in developing plans than DEM, hence, no precondition. DFW submitted a current, albeit fairly simple, harvest regulation strategy based on a contemporary analysis, which we

scored slightly higher than the minimum threshold for the reasons noted. DEM's strategy is very old, and seemed quite unrealistic in today's resource management environment, and did not, in our judgment, meet SCS minimum criteria, so a condition was issued.

A.2 Stocking and Growth Control

I believe most of the comments and observations to be substantially correct. I wonder, based on the findings, about the scoring difference between DEM and DFW. Based on the "Observations and Concerns", should quality control issues be mentioned for DFW as well as for DEM?

Response: In fact, both agencies rated very highly here (95 vs. 90) so "quality control" issues were quite minor in the "big picture." We believe the main superiority of DFW lay in its more common use of "non-uniform" stand prescriptions, which we believe better achieves the goal of enhancing diversity in future stands.

The shelterwood system is not really well-established for regenerating red oak.

Response: Noted

A.3 Pest and Pathogen Management

The Recommendation for formation of an adelgid task force is worth consideration, but I wonder if a broader approach would have more value. There are other real and potential threats (e.g., Asian long-horned beetle, hundreds of prospective invasive plant species). A standing secretariat-wide committee/ task force that could draw on specialists as needed to evaluate, anticipate and respond to pests and new threats might be useful. Such a task force could be used to keep policy and land management personnel up-to-date scientifically so that state-of-the-art decisionmaking could be applied to all state lands. Key information produced by the task force could also be distributed to private landowners and practicing natural resource professionals.

Response: This seems like a good idea to us; such a task force would certainly enhance performance to a very high level if effective. Our focus here was on the very serious, pervasive, and imminent threat of the adelgid, which does not seem to be met with a coordinated response. We did not judge the other threats mentioned to be of the same urgency. After seeing the peer reviewer's comment, perhaps the agencies will give this serious consideration.

A.4 Forest Access

The differences between MDC and the other two agencies are clearly identified. I am unclear on why DFW receives a higher score than DEM if DFW has no road inventory, has uncontrolled ATV use, and "appears to lack access to some tracts".

Response: The main reason DFW's score was slightly higher was because the newly constructed roads on DFW lands seemed to be generally of higher quality than DEM, and DFW lands appeared to be somewhat more accessible overall, if only because they are generally in smaller parcels. DFW has fewer large parcels of land that require a dedicated road system such as exists in state forests. Stakeholder comments as well as field observations indicated that uncontrolled ATV use is not nearly as prevalent on DFW lands as DEM state forests. Importantly, neither agency met certifiable standards here for the reasons cited; since the condition applies to both, the concern of the peer reviewer of unequal treatment should not really be a concern here. Lack of access to DFW tracts may require use of temporary easements until more permanent rights can be acquired, but does not yet unduly limit DFW management options.

Comments on MDC's public involvement appear to be accurate. I am not knowledgeable about DFW's public involvement procedures. While I agree that DEM has suffered seriously from lack of an efficient planning process, I would not characterize DEM's approach as one of "benign neglect". (I'm not sure whether the assessment team is simply reporting here or whether it is comfortable with the term.). I would characterize the situation as one of too much to do with too few resources, combined with a leadership vacuum. DEM actually does a lot more than many people realize, but the absence of strong programmatic leadership at the agency level and an efficient process contribute to the benign neglect perception.

A.5. Harvest Efficiency and Product Utilization

Why does lump-sum selling "create supervision problems"? I don't believe it does.

No other comments on this section.

Response: To reiterate the comment in the report, there is a tendency for loggers to cut scattered unmarked, valuable trees, which are essentially "free" if bought by lump sum. Preventing this takes diligent supervision and a willingness to enforce penalty clauses. If timber is sold by mill scale, then the landowner will get paid for every board foot cut, whether or not the tree was marked. (This assumes the mills and truckers are honest.) In any event, this is certainly not an important issue if the agencies feel it is working for them; rather, we were just pointing out that business is done differently in other parts of New England.

A.6. Management Plan and Information Base

I am less familiar with DFW's information resources than the other two agencies. The team's observation on the disconnect between GOALS plans and state forest management planning is correct (DEM). The relative autonomy of the two Divisions (Forests & Parks and Resource Conservation) within DEM is a long-standing problem that needs to be recognized and remedied by strong action taken at the secretariat level.

My comments relative to Conditions and Pre-conditions are contained in a later section.

Response: Noted

B1. Forest Community Structure and Composition.

Is the “optimal distribution of seral stages” a knowable thing?

Response: This phrase came right from the FSC standard, so I see no reason to modify the language.

I question a theoretical ideal that would restore the forest to pre-settlement conditions. It is a post-settlement time. What justification is there for positing the pre-settlement forest as an ideal in a densely populated state characterized by radically different ecological conditions?

Response: This is DEM's state goal, not that of SCS. If I were to justify this goal, however, I would suggest that seeking to achieve pre-settlement conditions of forests on public lands might be an appropriate goal for reasons of historical significance if no other.

I agree that the DFW's land-cover mapping procedure and process should be emulated by other agencies and large private landowners to improve planning at the landscape level.

Deficiencies in data and analytical capability for DFW and DEM are clearly identified. Possibilities for improved sharing of information resources are also specified. Achieving greater inter-agency cooperation and moving forward promptly will require strong leadership at both the agency and secretariat levels.

B2. Long-Term Ecological Productivity

While I agree that whole-tree logging should be used carefully and selectively, removing it totally from the manager's toolbox would be a mistake.

Response: Noted

Although clear-cutting is apparently prohibited for DFW, I disagree with the statement that clear-cutting would be unlikely to be used to accomplish the objectives of forest management. It is a legitimate silvicultural system in certain forest types and on certain sites. Even if clear-cutting is out of the question for DFW, the assessment report should not imply that it is categorically unsuitable for DEM and MDC.

Response: Sentence removed.

B3. Wildlife Management

Overall, I think that the report does a good job of identifying strengths, weaknesses and issues relating to wildlife management actions and programs. This is another prime case

of where sharing of expertise among agencies has the potential to improve the quality and efficiency of management. The leadership to make this happen must come from the highest levels of EOE. Not all field personnel will have the same level of expertise, but it should be possible to devise easy-to-use procedures so that management decisions and prescriptions are able to incorporate the best information available.

Although I don't know many specifics of the "adversarial relationship" between DEM and NHESP, the fix for this must come from EOE itself (same old boring theme) rather than from an arm-wrestling match between two agencies. EOE must make it clear that both protection of biodiversity and the operation of the statelands management program are high priorities. Restrictions on practice, sometimes imposed by NHESP, are based on best available knowledge, which is sometimes substantial and sometimes almost totally lacking. The report points out correctly that DEM needs to better incorporate NHESP data into its planning process. I suspect that the reverse is also true – that NHESP could benefit from an enhanced understanding of silvicultural and forest management theory.

Response: Noted

B4. Watercourse Management. No significant comments.

B5. Pesticide Use. No significant comments.

B6. Ecosystem Reserve Policies

Although it is of little consequence in the current certification decision, I am confused about the higher score given to DFW than to DEM. I agree with the overall conclusion that neither agency deserves high marks at this point in time. It would appear that the assessment team has awarded DFW a higher score for the stated intention of reserving 15% of land area and representative areas of all natural community types. Although DEM has in fact reserved approximately 5% of its acreage, it receives a lower mark. The issue that this raises is the relative importance of stated intentions versus concrete action. I recognize that the point is really moot in view of the proposed Condition.

Although it is true that the agencies have not worked "to plan comprehensively for reserves", it should be noted that all three agencies are in frequent contact with a variety of private non-profit forest conservation organizations that advocate for reserves.

Program Element C. The only comment I would make on the introductory text to this section is to note that financial viability can result from the addition of external (non-timber management) capital, especially on public lands. A social decision can be made to cover the costs or ownership and operation beyond what is produced by a timber management program.

C.1. Financial Stability

I believe that the assessment team did a pretty good job of summarizing some of the major institutional issues in Massachusetts.

I am not entirely in agreement with the statement that there is “strong political support for protecting public lands from conversion to other uses, but financial support for managing these lands is relatively weak.” I think that the level of support for management is determined more from within the secretariat than from the fact that there is no ready-made constituency for forest management in an urban state. Support for land management is a product of staff advocacy, focus at the commissioner level, and leadership at the EOEA level. Both MDC and DFW, with clear missions, have generated significant support for land management. DEM’s mission is broader, and land management plays second fiddle to parks. I believe that DEM’s land management program can generate significant financial support with appropriate leadership within DEM and at the upper levels of EOEA.

Response: Noted

Again, I think lump-sum selling is a non-issue and is not worthy of any attention.

Concerns about roads, their maintenance and associated capital needs are well-founded. In some cases, I believe that what appear to be DEM roads are actually town roads. This doesn’t eliminate the issue, but may complicate the picture on how maintenance is funded and the extent to which the state agency is realistically able to address the issue. The PILOT issue and the role of DEM in a number of small towns is vitally important.

C.2. Community and Public Involvement

Factual error – Massachusetts does not rank 8th in area of forest. MA is the 8th most forested state (by %)

Response: Corrected

Comments on MDC’s public involvement appear to be accurate. I am not knowledgeable about DFW’s public involvement procedures. While I agree that DEM has suffered seriously from lack of an efficient planning process, I would not characterize DEM’s approach as one of “benign neglect”. (I’m not sure whether the assessment team is simply reporting here or whether it is comfortable with the term.). I would characterize the situation as one of too much to do with too few resources, combined with a leadership vacuum. DEM actually does a lot more than many people realize, but the absence of strong programmatic leadership at the agency level and an efficient process contribute to the benign neglect perception.

Response: The term "benign neglect" was in quotes to reflect an agency perception rather than a literal truth. DEM was the least prepared, at least in terms of transparency of management activities, of the three agencies to involve affected interests in agency management activities. Given the greater controversies over

management of state forests, it would benefit DEM to redouble efforts to improve their performance here.

I agree with the report's assertion that "all agencies need to make a concerted effort to more effectively and publicly market the benefits of forest management in an increasingly urban state". But this goes nowhere unless the upper levels of EOEA buy into it. If, at the secretariat level, forest management is something that is merely tolerable, agency-level messages will not be particularly effective. If forest management is embraced at the secretary's level as essential to an overall sustainability strategy in a prolifically consuming society, agency messages will be much more effective.

At the agency level, DEM and DFW have the opportunity to promote the concepts of good forest management by selecting representative demonstration areas and focusing public outreach efforts at these sites. Real places, real management, good explanations of what is happening, why and how.

C.3. Public Use Management

Although recreation is important to all three agencies (in different ways), I think the assessment report is perceptive in stating that the agencies "do not place a high priority on the **concurrent** management for recreation values" (emphasis added). At least in the case of DEM, the separation of function by Bureau and the absence of a comprehensive planning mechanism create the problem noted in the report.

C.4. Investment of Capital and Personnel

Although I agree with most of the statements made here, I would point out that DEM is noteworthy among the New England states in supporting the travel of forestry field personnel to the annual regional meeting of the New England Society of American Foresters, an important networking and continuing education event.

C.5. Employee and Contractor Relations

Factual correction (bulleted list in Observations and Concerns): forest management personnel are employed within the Division of Forests and Parks. The assessment team probably means to say "higher profile of other Bureaus within the Division of Forests and Parks".

C.6. Compliance with Relevant Laws, ...

Does the assessment team really intend to imply that DEM is knowingly in violation of state law? If so, why is this not a fatal flaw? If not, why is DEM's score so much lower?

This was tied to the lack of current management plans for state forest lands, and is intended to be a deficiency, not a "violation of statute". See pre-condition DEM 2002.1.

COMMENTS ON CONDITIONS AND PRECONDITIONS

- Each of the Pre-conditions and Conditions is coded by the agency or agencies to which it applies. Only one Condition is designated “EOEA”. Many of the most serious problems identified in the assessment report, even those that are technical in nature, will be remedied by coordinated allocation of resources, clear stipulation of program priorities, and mandated collaboration among agencies. Clear leadership exercised at the administrative level of the secretariat is the single most important “fix” for many of the problems correctly identified in the report.
- The assessment report comes at a time when the state budget and economy is in severe crisis. The very existence of the MDC is in doubt; reorganization of state government will happen although I’m not sure if anyone knows what this will look like. Reorganization per se does not change the challenges and opportunities.
- After having read the entire report once and some sections several times, I have to raise a general question for the team (and I honestly don’t have a firm opinion on this). Is it possible that the general acrimony and obvious dissatisfaction among some stakeholders with DEM created any kind of slight and subtle prejudice, such that equivalent situations in two agencies (usually DEM and DFW) would be viewed slightly differently? I am not asserting that this is the case – I am just raising the question.

Response: We believe the team was not influenced by any “acrimony” from the extensive stakeholder consultations. (Actually, acrimony was quite uncommon; criticism of DEM was more often offered in a constructive and understanding tone.) It is true that the responses of DFW and DEM to our pre-audit information request were quite different, in a way that casts a more positive light on DFW management than this reviewer may believe is warranted by their historical record. In preparation for the audit, DFW mounted a large effort to complete management plans for various units, develop an allowable cut for their properties, and generally tried to “cover all the bases” that they knew would be addressed during the audit. Because all this activity was quite recent, it is understandable that the reviewer, an experienced observer of Massachusetts forestry, was not aware of these accomplishments. DEM, on the other hand, typically responded with outdated file material, or didn’t address certain important issues at all. In order to conduct these audits efficiently, we expect clients to “make their own case” via their response to our information requests, which we then verify during the field activities. If a client does not provide such evidence, or the evidence is not convincing or relevant, we can only conclude that performance is weak in this area.

Pre-condition DEM 2002.1. Given the “Applicability Note” in the Northeast Standards relative to a single unified document, I’m not sure whether a Pre-condition is necessary, rather than a Condition. DEM’s information base supporting management decisions is far greater than DFW’s. Regardless of the decision relative to Pre-condition vs. Condition, it seems to me that DFW and DEM are in the same boat.

Response: *We are not sure what the reviewer is referring to here relative to the difference in DEM vs DFW’s information bases. While it is true that DEM has a CFI system and some forest inventory numbers, these are not well integrated into management planning. DFW, on the other hand, has no volume data, but has excellent maps and other spatial information that was a central feature of their new habitat plans for the various management units. They do outstanding ecological monitoring prior to any sale activity. The presence of good spatial data, integrated into a site-specific plan, clearly passes muster under the “Applicability Note” for DFW. DEM, on the other hand, never once even produced a simple forest type map for an entire forest. Many other things listed under the Criterion 7 are simply not available, and DEM made very little attempt to provide evidence that they did exist in some form somewhere. So, while we try to be accommodating here under the regional standards, there were simply too many things missing not to consider this a “Fatal Flaw” violation of the FSC P&C, and thus issue the precondition.*

Pre-condition DEM 2002.2. I question the appropriateness of SCS dictating position and hiring requirements. I do not question the need to require evidence of leadership that is currently missing. My suggestion is to use more generic language.

Response: *Pre-condition remains but language modified.*

Condition DEM/DFW 2001.1. The requirement to make huge progress on this is completely reasonable. I’m not sure whether 5 years is long enough to complete plans for all properties.

Response: *The state indicated that 5 years was reasonable- in their comment to SCS.*

Condition DFW 2002.3. I suspect that two years isn’t enough time.

Response: *Noted, the time frame can be adjusted during surveillance audits if it proves that 2 years was in-fact unrealistic.*

Condition DEM/DFW 2002.4. The two-year requirement for inventory and a preliminary plan is reasonable. Full implementation will probably take longer. The time involved in working with many small towns must be recognized, and time adjustments made accordingly.

Response: *Noted, the time frame can be adjusted later on if it proves that 2 years was in-fact unrealistic.*

Condition DEM/DFW 2002.7. Two years is probably not enough time to go through the full HCVF process in a conscientious way.

Response: Noted, the time frame can be adjusted during surveillance audits if it proves that 2 years was in-fact unrealistic.

Condition DEM/DFW 2002.8. Five years is probably a more realistic time frame.

Response: Noted, the time frame can be adjusted during surveillance audits if it proves that 3 years was in-fact unrealistic.

Condition 2002.10. I suggest adding to this the requirement that NHESP implement a program to train staff in basic understanding of silvicultural systems, timber harvesting systems and impact evaluation techniques.

Response: We can't actually require DEM to work with NHESP to achieve this objective, even though that is the intent. And, we certainly don't have a mechanism to require NHESP to do anything. That said, it is a good idea that NHESP staff to be well versed in forest management systems and harvesting technology. Hopefully, this will come from better working relationships between the two agencies.

End of Peer Review Comments - Thompson

Comments by William M. Healy on April 2003 Draft
Forest Management Certification Evaluation on the
Natural Forests Managed by the Commonwealth of Massachusetts
2 May 2003

General Comments

The evaluation is thorough, thoughtful, and technically accurate. I concur with the pre-conditions and conditions set forth. The schedules imposed for meeting these conditions seem reasonable, provided funding and staff levels are maintained during the current fiscal crisis.

Before reviewing the April 2003 draft Evaluation, I read the SCS Program Description and Operations Manual, the Final Interim Standard for State Forestland in Massachusetts, and the November 2002 draft Evaluation annotated with comments from EOEA agencies.

I will start by sharing my perceptions of public attitudes toward forestry in Massachusetts, because they may be useful to the review team during the monitoring process, and public attitudes are related to the perceived low harvest rates by DEM and to efforts to calculate an allowable timber harvest for DEM lands.

In Massachusetts allowable timber harvest rates are determined by a combination of public attitudes and scientific evaluation of forest growth and yield. "Socially"

sustainable harvest will generally be below the ecologically sustainable harvest, especially on DEM and DFW lands. The review team noted (p. 51) that some environmental groups believe there should be no timber harvesting on public lands. If there were a statewide ballot referendum tomorrow, asking if timber cutting should be allowed on state forests, the “no” votes would win handily.

What constitutes a “socially acceptable” timber harvest seems to be determined by the appearance of the cutting job and the motivation for harvest. Those attitudes were continually evident during the many years I served on the Town of Leverett Conservation Commission. Regeneration cuts with either uneven or even-age silviculture systems were viewed with general disapproval. In contrast, intermediate cutting that kept stocking at B-level or above were generally acceptable, regardless of ecological consequences. One cutting, along a heavily traveled road in Leverett comes to mind. The logger (not a forester!) removed almost every mature red oak on the tract, but cut only about 20% of the BA. There were two foresters on the Commission, and despite our explanation of the loss of mast production potential and the long-term consequences for forest species composition, our fellow Commissioners remained unconcerned about that type of cutting. Most of the townspeople seemed to share that view, and it was my impression that for many people the appearance of the job was the primary factor determining its acceptance. Most residents just did not like to see big gaps in the canopy.

The motivation for timber harvest also seems to have a strong influence on public acceptance of timber harvest. The review team noted (page 115) the distinct public “personas” of MDC, DFW, and DEM. I agree and characterize them as follows.

MDC: they are the water people. “Good forestry means lower water rates.” That slogan will sell in Boston. MDC has the additional advantage of consolidated land holdings and limited public access—so harvests appear small relative to the landscape and cutting operations are often out of sight.

DFW: They are the wildlife people, “helping wildlife with habitat management.” The review team noted (p. 92) that DFW is prohibited by state statute from clearcutting, and yet they promote young age classes. In fact, DFW has an excellent program for creating early successional habitats. I once visited a game land to watch a machine, nicknamed the brontosaurus, reduce 40-foot tall trees to chips in a few seconds. Pretty impressive machine, and it sat in the middle of an impressive “non-clearcut.”

The public seems to put a hierarchy of values on the motives for management, and intense disturbances such as clearing or controlled burning are acceptable when they are done to benefit wildlife or rare communities. Unfortunately, cutting trees for profit seems to fall at the bottom of that scale of values.

DEM: It is more difficult for me to make a one-line caricature and slogan for DEM. Perhaps that is because DEM’s mission has several co-equal components (water, wood, wildlife, recreation), rather than a single overriding goal. (See page 29 for a

comparison of DEM, DFW, and MDC mission statements. A continued and increasing supply of forest products is the last item in the list of public interests to be protected by DEM.) I think a good image for DEM would be “keepers of the forest,” and “growing trees for the future.” I am quite sure that “DEM—the timber people—cutting trees for bigger budgets” would be a publicly unacceptable and politically unsupportable image.

I strongly agree with the need for strategic, comprehensive planning, scientifically based growth and yield estimates, and public input. That planning effort should frame timber harvest in the context of maintaining plant and animal diversity, improving wildlife habitat, and protecting rare habitats. I agree that DEM and DFW should work closely together and probably share most of the same objectives for age class, structure, and composition. I suspect the planning process will identify “socially acceptable” harvest levels that increase greatly the public benefit derived from these forests.

Specific Comments

The following comments and questions are keyed to numbers written in the text margin. The same number may appear in several places.

1. Pages 14 and 90. “There were very few or no instances” Ambiguous—which was it? The statement also seems odd because it is difficult for me to imagine the marking guides used by EOE agencies leading to reduced diversity.

Response: Report changed to “instances”.

2. Pages 16 and 81. “... there is little evidence that a process to complete such plans is seriously underway.” I suggest deleting this phrase because it contradicts statements made elsewhere about the commitment of funds and staff to the planning effort. For example, page 5, last paragraph, repeated in bold as April 2003 update on page 80; April 2003 updates regarding GIS systems (p. 80), and Chief Forrester position (pages 23,82); and DEM contracts to map old-growth and HCV forest (page 18).

Response: Agree, sentence deleted

3. Page 17. “Social impact monitoring is not systematically conducted.” What types of variables or attributes do you suggest monitoring?

Response: Some variable to consider in social impact monitoring include trends in numbers and nature of public input, overall employment numbers, employee turnover rates.

4. Page 23 footnote, pages 16, 78, and 89. References to ecoregional planning or ecoregional conservation of biodiversity. It was never clear how you were defining “ecoregional” or the geographic scale envisioned. This term often implies very large geographic scales as was used by Yaffee (1999. Three faces of

ecosystem management. Conservation Biology 13:713-725). The discussions of management planning focused on state level and cooperation among agencies, which is appropriate. Use of the term “ecoregional” seemed to blur the picture, and imply something more was expected.

5. Pages 58-60, 62, Tables 9.A.1, .2, .3. Resource and Harvest Statistics.

- a. I suggest deleting the comparison with Maine from these tables and if there are particular numbers you wish to compare, do so in the text. In Table 9.A.1 only 2 numbers are given for Maine, and the reader has to calculate acres harvested as a percentage of forest area to make comparisons. It is easier for the reader to compare Massachusetts and Maine numbers in Tables 9.A.2 and .3, but it does not add much.

Response *The team was repeatedly questioned by the client and others about the performance and standards applied in recent, similar audits. We believe there is merit in including the Maine audit because it is a similar public agency with about the same size land base as EOE in total. This is also a way to illustrate that SCS and some team members have substantial experience in FSC audits in comparable situations. Finally, it alerts potential readers to the existence of another report that can provide further examples of FSC certification processes in New England.*

- b. Tables 9.A.2 and .3 show averages over the most recent 5 years (DEM), 6 years (DFW), and 3 years (MDC). I think using averages for the most recent 3 years for all 3 agencies would give a better comparison.

Response: *Here we are simply reporting what the agencies provided to us in our information request. Because activity was sporadic on DFW and DEM for various reasons, we believe a longer period is more representative here, and fairer to the agencies.*

I was surprised to see that the DFW management program had been going on for 6 years. My guess is that a plot of the annual activity would show a steadily increasing trend. Trends for DFW income are not given.

The 5-year averages for DEM produce a lower estimate of harvest activity than would be seen using the 3 most recent years. DEM timber product revenue is shown for these years on page 112. “Activity was limited in 1998-99 due to a concerted effort to complete work on the continuous forest inventory (CFI).” Revenue in 2000 was about double that of 1998-99; revenue doubled again in 2001, and continued to increase in 2002. The average income for the most recent 3 years (534) is substantially greater than for the last 5 years (384).

MDC revenues are shown for the past 5 years on p. 111. Averages for the most recent 3 years and the most recent 5 years are almost identical, so using averages for the most recent 3 years would give the best inter-agency comparison..

- c. Page 57. DEM “attainable” harvest. The 1981 DEM volume-based allowable cut was estimated at 16.8 MMBF, and in 1983 this was reduced to an “attainable” harvest of 6.6 MMBF. I suspect the “attainable” harvest may be close to the “socially acceptable” harvest I was considering in my general comments. I agree with condition 2002.2 for completing allowable harvest calculations. My point here is that the biological calculation will probably be constrained by other considerations.
6. Page 73. “Although hemlock is not a particularly high value species” I suggest rewording to indicate the stumpage values for hemlock are low relative to other species. Then, I would emphasize its unique values for esthetics, effect on microclimate, and value for wildlife habitat; e.g., enhanced breeding bird diversity; winter cover for white-tailed deer, porcupine, fisher, red squirrel, and ruffed grouse.

Response: Re-worded

7. Page 73. “... if much of the forest is allowed to reach a low-vigor condition associated with ecological maturity.” This sounds like the argument used by the early foresters to liquidate old growth and replace it with young stands! It also seems to contradict some of the criteria given for long-term ecological productivity on p. 91. I would either delete the second part of this sentence, or rewrite to express concern over large acreages of even-aged forests in which most of the canopy trees are reaching physiological maturity at the same time.

Response: Re-worded

8. Page 74. “DEM ... lack of any discernable policy on hemlock adelgid.” Previous page indicates that there is no consensus about managing the adelgid outbreak, that DEM has released and is monitoring adelgid predators, and that DEM has contracted Dr. Orwig to develop a silvicultural strategy. Sounds like a plan to get enough data to develop a comprehensive policy.

Response: Re-worded

9. Page 76. “... inadequately maintained old roads that have not been recently used for logging but remain in use by the public.” Were these roads owned by the town or DEM? As I recall, most of the access to DEM and DFW land in western Massachusetts was directly from town roads, and not roads built or maintained by DEM and DFW.

Response: Combination of town and State roads.

10. Pages 76-77. Stumpage sales versus mill scale sales. I strongly prefer stumpage sales to mill tally sales, and always recommend stumpage sales for private landowners. I don’t understand how mill tally prevents timber theft. All of the serious cases of timber theft I have been aware of involved mill tally and not stumpage sales.

Response: Noted

11. Page 85. “(4) stand diversity is designed to avoid fragmentation caused by a preponderance of uniform-sized stands; ...” I do not understand this statement. How would uniform stand size cause fragmentation?

Response: refers to diversifying the cut boundaries for stands.

12. Pages 100-102. “Pesticide Use: Practices and Policies” Use of terms chemical, pesticide, insecticide, and herbicide is inconsistent. Use pesticide when referring to both insecticides and herbicides, insecticide for chemicals used to kill insects, and herbicides for chemicals used to kill plants.

Suggest the first paragraph under DEM, p. 101, read as follows:

Herbicides are not used as part of silvicultural prescriptions. The herbicide glyphosate [spelling?] was used on October Mountain State Forest to control hardwood reproduction and maintain a small permanent wildlife opening and vista.

Response: Report modified so there is consistent use of terms.

13. The Forest Cutting Practices Act does a good job of protecting wetlands and water resources, **but** it regulates cutting and not silviculture. Most harvests are described as “selection cuts,” meaning the operator cuts what he wants. Most consulting foresters do a good job of providing some regeneration and leaving options for the future. For most private lands, harvests are a matter of opportunity; there is no silvicultural system because land tenure is much shorter than a rotation. The Forest Cutting Practices Act does not protect against high-grading, and in most cases future composition is left to chance.

Response: Noted

14. Page 117. I agree that DEM could and should be doing more, and I support the conditions set forth in this report. But, I want to put a social context around the “benign neglect” strategy, and note the possibility that benign neglect may be the publicly preferred alternative that emerges from the planning process.

The social context—

- Page 58: Funding agencies that do not require EOE 5/4/04 agencies to produce an even flow of forest products to generate income.
- Page 109: An urban population that knows little about or is little affected by forest management. No ready-made constituency for forest management.
- Page 54: Stakeholders who want more management and greater harvest rates, and (p. 51) stakeholders who don’t want any harvest.
- Page 30: Fourteen million visits annually to DEM lands.

Within that context “benign neglect” may be the most politically and socially acceptable strategy. Interestingly, benign neglect also seems to be an outcome of a mission that promises all things to all people (see p. 29: water, flood control, soil

protection, wildlife, recreation, air quality, and forest products). To move forward DEM must pick an overarching theme that covers the long list of public interests they are to protect. DEM also needs to decide the “persona” it wants to project. Perhaps DEM should strive to become “the biodiversity team.” That umbrella would cover a multitude of activities. The motivations would be acceptable to the public, and a substantial amount of forest product would be produced as a byproduct of meeting biodiversity goals.

Response: Noted

15. Page 120. “... little evidence DFW is actively managing their lands for public use.” I always felt welcome on DFW land. Maps and descriptions of the properties were available at regional offices. I never had a problem locating any of these areas. Parking areas were signed and well dispersed. In some cases I thought parking areas were overdeveloped and led to crowding during hunting season. Generally, I thought DFW did a good job of providing for dispersed recreation, such as hunting, hiking, and bird watching.

16. Pages 125-126. “The current DEM staffing *as depicted on organization charts* is adequate in total numbers,” Is the current staff adequate, or is the proposed staff adequate? My impression for earlier comments was that there were key vacancies, and DEM comments suggest they are below proposed staffing levels.

Response: The comment implies that adequate staffing would be reached if and when current vacancies are filled.

17. Pages 127-129. “... lump sum sealed bids ...” This statement is repeated for MDC, DFW, and DEM. I think it would be adequate to say that DFW and DEM follow the same bidding procedures as MDC.

18. Pages 76 and 81. Footnotes are missing.

Response: Footnotes added

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304-477-3301

10.3 CONDITIONS AGREEMENT

EOEA agrees to implement the conditions specified in section 1.4 of this evaluation report within the stipulated time-frame, unless modified by SCS.

Signature of EOEA Representative

Date

Printed name of EOEA Representative

10.4 Description of Reorganization and Progress on Conditions



MEMORANDUM

NOTE: EOEA response to this memo is embedded, in bold italics, within the list of questions/categories that follows. Responses were provided for DCR/Bureau of Forestry by Jim DiMaio, for DCR/DWSP by Thom Kyker-Snowman, and for DFW by John Scanlon.

To: Bob O'Connor, Thom Kyker-Snowman, Jim Dimiao, John Scanlon

From: Dave Wager

Subject: Information Request for Update Audit (Desk Review)

Date: March 10, 2003

Background

Scientific Certification Systems (SCS) evaluation of DEM, DFW, and MDC was conducted in 2002 and concluded with the final report being delivered in early 2003. The

certification report memorialized and justified SCS' decision to offer FSC-endorsed certification for DFW and MDC, with pre-conditions needed to be completed for DEM. Since over 1.5 years have passed since an SCS team was in the field, there needs to be a review of any changes in management or conditions of the forest that could effect the decision to offer FSC-endorsed certification. The two main questions of the update audit are:

- Have there been pertinent changes in DEM, DFW, or MDC's management, relative to observed circumstances in August, 2002, such that the fundamental certification decision and appurtenant terms/conditions are now in need of revision?
- Have changes in the requirements for certification under the FSC now in-effect required revision to the terms of certification?

The memorandum details the information that needs to be provided to SCS in order to complete this update audit. The update audit will consist of:

- A desk review of the written responses to the questions posed, below, in this memorandum
- Any supporting documents (e.g., revised management plans, written policies, etc) that can be provided as evidence
- Interviews with pertinent staff (if needed)

Additionally, during the first annual audit, SCS will carry out any on-site verification that may be needed with respect to aspects covered in this update audit. Because of the extended length of time since an SCS auditor has observed practices in the field, we would need to conduct the 1st annual audit in June of 2004 (assuming certification is awarded before then).

Update Information Needed

Changes in Organizational Structure

- Describe the effects of reorganization on the entities (DEM, MDC, DFW) that were the subjects of the original evaluation.

DEM and MDC have been merged within the new Department of Conservation and Recreation. The former DEM Bureau of Forestry remains a bureau within the new DCR. The State Forests previously managed by the DEM Division of Forests and Parks are currently under the DCR Division of State Parks and Recreation. The former MDC Division of Watershed Management is now the major component of the DCR Division of Water Supply Protection. While the full and final outcome of reorganization is still incomplete, the fundamental personnel assignments and

management directives for the lands that were certified as "DEM" and "MDC" remain substantially the same in April 2004 as they were during the SCS audit.

The Division of Fisheries and Wildlife was not reorganized, although the parent agency changed its name from The Department of Fisheries, Wildlife, and Environmental Law Enforcement to the Department of Fisheries and Wildlife when environmental law enforcement was moved out of the agency to become a separate entity within EOE. Subsequently, the Division of Fisheries and Wildlife was changed to the Division of Fisheries and Game. The Division will, in time, seek to change its name to something other than "Fisheries and Game", but in the meantime, previous reference to acronym "DFW" can still be applied, but now refers to the Department of Fisheries and Wildlife as opposed to the Division of Fisheries and Wildlife. All personnel assignments and management directives remain unchanged within DFW.

For example changes in:

- Key Personnel

DCR: Bureau of Forestry:

Chief Forester Employed

Supervisor for Management Forestry is on long term sick leave

An acting supervisor will serve until further notice

- Staffing levels

DCR: Bureau of Forestry:

One Management Forester retired

One Assistant Management forester contract employee was terminated in FY 2003 due to lack of funds

One Assistant Management forester position is being filled

DCR: Division of Water Supply Protection

The Forester II position at the Ware River was vacated when Steve Drawbridge passed away near the time of the original audit. This position has not yet been refilled, but interviews have been completed and the necessary approvals are underway for filling this position. There is also an effort underway to create a replacement position for the Forester II at Quabbin that was vacated by early retirement in 2002.

DFW: One Management Forester (Brian Hawthorne) was hired on 4/5/04 to replace former Management Forester Tom O'Shea, who was promoted to Southeast District Manager in July, 2002.

- Agency Responsibilities

DCR: Bureau of Forestry: No Change at this time

DCR: Division of Water Supply Protection – no change

DFW: No change.

- Funding

DCR: Bureau of Forestry: Funding is stabilized. Additional funding through annual operating and capital improvement state funding, and Forest Service grants and programs have improved the financial situation. However, additional funding resources are needed to meet the conditions of certification. These funding needs are currently being discussed.

DCR: Division of Water Supply Protection. Efforts are underway to return the Division's budget to its level before the FY 2002 reductions. This is being promoted by the MWRA, which provides the budget but does not set it. MWRA desires full funding for watershed management in order to meet its obligations for maintaining drinking water supply protection. The current proposed budget includes an approximately \$1.2 million increase for watershed management.

DFW: The dedicated Inland Fisheries and Wildlife Fund (Inland Fund), which supports the DFW Forestry Program and numerous other DFW programs and includes proceeds from the sale of state hunting, fishing and trapping licenses, and associated Federal Aid reimbursements was eliminated effective June 30, 2003 as part of a wide-ranging state budget overhaul, but was subsequently restored on October 31, 2003 by an act of the Governor that took place at the DFW Field Headquarters in Westborough, MA. Funding of the DFW Forest Project Leader and two Management Forester positions is provided through the Inland Fund. Temporary funding to support one full time equivalent GIS position and three part time field technicians using contracted vendors is supplied through state bond monies made available to DFW from EOE.

- Management philosophy, goals, objectives

DCR: Bureau of Forestry: Management philosophy, goals, and objectives are more closely aligned with certification standards, Water Supply Protection (MDC) and Fish and Game. Improved communications with Cultural and Natural Resource Programs have occurred. The intensity of management on State Forests has improved. However, improvements need to continue.

DCR: Division of Water Supply Protection. Management philosophy, goals, and objectives remain substantially the same. Management perspective has benefited from much more regular interactions with the Bureau of Forestry and the DFW Division of Fisheries and Game in the pursuit of Certification and recently in the development of landscape assessments and a related discussion of establishing a system of reserves across the state.

DFW: Management philosophy, goals, and objectives remain substantially the same. Management perspective has benefited from regular interactions with the DCR agencies. Ecoregion-based assessments of forest conservation issues and a related, on-going effort to create a system of forest reserves on DCR and DFW lands has fostered cooperative planning efforts and much greater public input into the management of DFW lands.

Changes in Administrative Context

- Other than the reorganization, what changes have there been in the administrative context that are pertinent to the State's forest management.

DCR: Bureau of Forestry: None

DCR: Division of Water Supply Protection. None, although there is an effort underway currently to bring all DCR "resource planners" together both to produce missing plans, to discuss the administrative hierarchy for planning, and to make all plans more consistent in approach and content.

DFW: None

Changes in Forest Management Area

- Have there been any major changes in size to the management areas of the entities (DEM, DFW, MDC) evaluated in the original assessment, e.g, acquisitions, trades?

DCR: Bureau of Forestry: No major changes

DCR: Division of Water Supply Protection. Although land acquisition continues to percolate, no major changes have occurred since the audit.

DFW: No major changes – approximately 1,000 fee acres in more than 10 parcels have been added to DFW holdings since the audit.

Changes to Silviculture

- Relative to the circumstances at the time of the original certification evaluation, have there been any significant changes in the calculated allowable harvests,

actual annual harvest, silvicultural systems and associated timber management prescriptions?

DCR: Bureau of Forestry: *No changes to the Allowable Sale Quantity, silvicultural systems or associated timber management prescriptions. The level of management on Bureau of Forestry State Forest increased from 842 acres and 3,295 MBF in FY 2002 to 1,424 acres and 7,263 MBF in FY 2003. The State Forest Continuous Forest Inventory and analysis was completed. Information is available on the composition, productivity, inventory, growth and mortality. This information will be very valuable when the Allowable Sale Quantity is calculated.*

DCR: Division of Water Supply Protection. *There have been no changes to the calculated allowable harvest on DWSP properties. The Land Management Plan for 2003 to 2012 for the Ware River watershed was finished and published in November 2003 (<http://www.state.ma.us/mdc/dwmpplans.htm>), but the allowable harvest and silvicultural objectives for this watershed have not changed since the audit. Despite staff reductions, actual harvests have kept pace with targets in our land management plans. During the 11 months since the MA certification report was completed (May 2003), DWSP has sold 7,731 MBF, 8,981 cords, and 11,270 tons from 1,637 acres at Quabbin and Ware River, plus additional sales from the Wachusett/Sudbury watersheds (summary unavailable at the time of this report; available on request). The Sudbury LMP is in its third draft and we have begun the process of drafting the next revision of the Quabbin LMP.*

DFW: *No changes in calculated allowable harvest, but DFW has completed planning for a comprehensive forest inventory through its contracted vendor, James W. Sewall Co., to revise and update existing allowable harvest information. Field work for the first of two inventory phases is set to begin in May of 2004 and will involve approximately 1,600 sample points across approximately 86,000 acres. DFW did not contract any timber sales in 2003, instead focusing on accuracy assessment of 86,000 acres of landcover data and site visits to some 500 potential vernal pool sites on DFW lands that had been mapped by the DFW Natural Heritage Program. DFW has contracted one timber sale in 2004 to assist the DFW Ecological Restoration Program with introducing a prescribed fire regime to manage a pitch pine/scrub oak dominated site at the Montague Plains Wildlife Management Area. While this was not a typical DFW timber sale, there have been no substantial changes to silvicultural systems and associated timber management prescriptions.*

Changes in Environmental Context

- Relative to the circumstances at the time of the prior full certification evaluation, have there been any significant changes to the environmental context of management of the state forests. For example, major insect, disease, or exotic plant issues, large statewide reserve initiatives, newly identified sensitive species, new concerns from environmental community, etc.

DCR: Bureau of Forestry: there have been no significant environmental changes. Monitoring continues.

DCR: Division of Water Supply Protection. The steady progress of the hemlock woolly adelgid is a growing concern. Eastern hemlock grows throughout the properties under care and control of the DCR/Division of Water Supply Protection, but is concentrated in three forest types: relatively pure hemlock stands; in mixes where white pine dominates; and in mixes where hardwoods dominate. Forest typing completed in the past several years indicates that at Quabbin, 1,642 acres (~3%) is in pure hemlock stands and an additional 5,434 acres (~9%) is in stands with a significant component of hemlock in mixes with other softwood and hardwood species. About 9% of the overall basal area on Quabbin permanent inventory plots was in hemlock in 2000, and hemlock sawlog volume based on those plots was approximately 30-35 MMBF. On DWSP properties on the Ware River watershed, about 7% of the overall stocking is in hemlock, the vast majority of which is in mixed white pine/hemlock stands, which total approximately 4,325 acres. A rough estimate puts the hemlock volume at Ware River in excess of 10 MMBF. Hemlock is < 2% of the stocking, on just over 120 acres of hemlock/hardwood type on the Wachusett Reservoir watershed. A significant portion of the hemlock stocking overall is located on wet soils, on steep slopes, or in riparian zones, some of which are steep-sided ravines, while other stands are on drier and flatter terrain. A policy for responding to this insect problem was completed recently. In short, it delays cutting of hemlock stands until they are 50% or more infected with HWA and prohibits cutting of hemlock in riparian areas (MA variable width filter strips) regardless of infestation level.

DFW: No significant changes to the environmental context of management. Similar to the DCR Division of Water Supply Protection, HWA is a growing concern, but DFW's internal policy has not changed – most if not all hemlock is typically retained during timber sale operations. A recent landcover mapping update and analysis revealed that, of the approximately 120,000 acres of DFW lands, 102,000 acres (85%) are forested. Of these 102,000 forested acres, about 3,500 acres (2.9%) contain a major component (generally >50% cover) of eastern hemlock. Another 16,800 acres (16.5%) of DFW forestland contains a moderate component (generally 25-50% cover) of eastern hemlock. Overall, nearly 20% of DFW forestlands contain moderate or major amounts of hemlock. It is likely that, over the course of the next few decades, most or all of the hemlock trees on these lands could die, but given that DFW lands are scattered throughout the state, any chance for genetic resistance to HWA may well be expressed on DFW lands. DFW is considering annual treatment of small, representative hemlock-dominated sites through contracted applications of horticultural oils on an experimental basis, but funding does not exist for this work, and any such treatment would have to be accomplished as an “in-kind” service through a timber sale contract.

Changes to Status of Conditions and Pre-Conditions:

Please describe any developments (progress, problems, other) relative to the following conditions and pre-conditions that were stipulated in the original assessment:

Pursuant to the SCS Forest Conservation Program protocols, the evaluation must specify one or more conditions for each SCS and FSC criterion that was assigned a score less than 80. The conditions are intended to rectify identified deficiencies, over a reasonable time frame. Pre-conditions are stipulated if a major failure is triggered or if an SCS Program Element Score or FSC Principle falls below 80 points.

Pre-condition DEM 2002.1: Prior to award of certification, DEM must complete the following stages of management planning:

1. Initiate a planning process⁸ that when completed will constitute landscape-level plans for all DEM properties across the state. In order to move this planning pre-condition to a condition DEM needs to:

- e) Define the geographic areas or regions that will form the basis of landscape-level plans, ideally, this step would involve all agencies (not just DEM) who can then use this as a common ecological framework.

Landscape Eco-regions have been developed cooperatively (Forest Service, Natural Heritage and Endangered Species Program, adjacent states, MA agencies) for all agencies.

- f) Commit to and provide a timeline to complete forest typing and mapping on all DEM forest- lands (we strongly recommend having this contracted, following the approach used by DFW).

DCR: Bureau of Forestry: A contract has been executed with James Sewell for forest typing, mapping, and interpretation of all DCR-Bureau of Forestry lands. Contract is 75% completed and the deliverables are expected by October 2004.

- g) Develop and implement a strategy to perform long-term resource allocation analysis and allowable cut calculations using an area-based model with yield curves derived from CFI data and other credible sources that account for the imbalanced age structure of the present forest and the evolving silvicultural systems being employed or contemplated.

DCR: Bureau of Forestry: A strategy to meet this pre-condition has been developed. Funding (\$10,000) has been secured for a contract with Mawson Associates (mensurationist) to document a proposed methodology to meet the conditions of certification. Conceptual methodology for long-term resource allocation analysis and allowable cut calculations have been discussed and agreed upon. The contract is

⁸ We recommend this be an ecoregional planning process, where ecoregions are defined that form the basis of the landscape-level plans.

anticipated to be executed by May 2004 and a proposed strategy developed by December 2004.

- h) Develop and implement a strategy to seek and incorporate credible public input in developing landscape-level and site-level plans.

DCR: Bureau of Forestry: This pre-condition has been met. See appended “public involvement” strategy.

2. Develop a management plan for one of the areas/regions defined in step 1 as well as a site plan for one of the forests (or other appropriate geographic unit) within that area/region. Development of these plans must include a credible public input process, and the end product must address all requirements under FSC Principle 7 and FSC criteria 4.4, 9.1, and 9.3.

DCR: Bureau of Forestry: This pre-condition has been met. See Draft of Federation of Women’s Clubs State Forest Land and Resource Management Plan (Forest Plan). This draft has been reviewed internally and will be undergoing a second public review. Audubon and The Nature Conservancy has previewed the 2nd draft and are very supportive of the Forest Plan.

This Forest Plan is intended to serve as the model for State Forest Planning process, framework, goals, desired conditions, objectives, standards, and strategies.

Pre-Condition DEM 2002.2: Prior to award of certification, DEM must demonstrate it has addressed the leadership gap created by the recent vacancy of its Chief Forester. Ideally, a Chief Forester would be hired based on a national search and an aggressive effort to recruit candidates of high professional stature with demonstrated leadership talents.

DCR: Bureau of Forestry: A chief forester has been employed since September 28, 2003.

Condition DEM/DFW 2002.1: Within 5 years of award of certification, DEM and DFW must complete regional and site-level management plans for all properties. For properties acquired in the last 12 months and for future acquisitions, management plans must be developed within 2 years of the date of acquisition. For details and recommended guidance, see Pre-condition 2002.1 and Appendix A.

DCR: Bureau of Forestry: A plan has been developed to meet this condition.

DFW: As described elsewhere, a series of ecoregion assessments are being prepared in cooperation with the two DCR agencies. In addition, the approximately 265 individual DFW properties have been grouped into 38 management units, with unit boundaries

based primarily on portions of major watersheds within a given ecoregion. Unit plans will be developed for each of the 38 management units. The number of individual DFW properties included in a given unit plan ranges from 3 to 30, and averages 7. Combining individual properties within a single, watershed-based portion of an ecoregion reinforces the landscape perspective in forest planning, and allows non-point source issues to be addressed for a suite of properties in a single plan. Two unit plans are currently in draft format.

Condition DEM 2002.2: Within 1 year of award of certification, DEM must demonstrate staffing and funding required to complete the allowable harvest calculations using the planning methodology outlined in Pre-condition 2002.1. The allowable harvest calculation must be complete for all DEM properties within 3 years of award of certification.

DCR: Bureau of Forestry: *See Pre-condition 1(c)*

Condition DFW 2002.3: Within 2 years of award of certification, DFW must complete a forest inventory (except for those properties acquired within the last 12 months).

Update: June, 2003, DFW has contracted with a private vendor (James W. Sewall Co.) to design an inventory to generate allowable harvest data, and to quantify tree, shrub, and herb composition on DFW lands. DFW has also contracted with consulting biologists and ecologists to carry out this work.

Update: April, 2004, DFW has completed planning for a comprehensive forest inventory and a companion biological inventory through its contracted vendor, James W. Sewall Co. Field work for the first of two inventory phases is set to begin in May of 2004 and will involve approximately 1,600 sample points across approximately 86,000 acres.

Condition DEM/DFW 2002.4: Within 2 years of award of certification, DEM and DFW must complete an inventory of their respective road networks and then develop and implement a work plan⁹ for mitigating erosion and access problems. Because erosion problems often result from illegal access onto roads that are already closed, DEM and DFW should develop and implement a strategy to improve enforcement of existing road closures. Erosion and access problems that are classified as the highest priority should be scheduled for closure or rehabilitation within 3 months of being identified. In other words, DEM/DFW must not wait until the entire inventory is complete before dealing with major problem areas.

DCR: Bureau of Forestry: *A contract has been executed to conduct road inventories.*

⁹ Work plan – An acceptable work plan should include specific objectives and tasks, personnel responsible for carrying out tasks, and a timeline for accomplishing the plan.

DFW: *Anticipates completing field work for this condition in 2005 with the same contracted vendors who are conducting the forest inventory and biological inventory in 2004. During the course of the 2004 inventories, vendors will GPS portions of road infrastructure they encounter, and record road condition. DFW has internally discussed the issue of controlling illegal access onto and resulting erosion and other damage to roads on DFW lands, but has not yet drafted a strategy to improve enforcement of road closures. Any meaningful strategy will require close cooperation with the Environmental Police, but this agency is already spread to thin, so new funding sources are needed.*

Condition DEM/DFW 2002.5: Within 3 years of award of certification, and as part of the management planning process, DEM and DFW must develop a long-term access plan for forest management and harvesting that includes maps of existing truck roads, plans and target dates for completion of roads to be built, schedule for road maintenance and road closures.

DFW: *No progress on this condition to date.*

Condition DEM/DFW/MDC 2002.6: As new management plans are completed and existing plans are updated (see Pre-condition DEM 2002.1 and Condition DEM/DFW 2002.1), agencies must modify and augment their existing public summaries. One single master plan for each agency that includes site level details is sufficient to meet this condition. Public summaries must be done in accordance with requirements under FSC Principle 7 and criterion 8.2 and be readily available to the public, e.g., post on EOE web site.

DCR: Bureau of Forestry: *See Pre-condition 1 (d).*

DFW: *As discussed elsewhere, ecoregion assessments are posted on the EOE website for public input. DFW Management Unit Plans (see condition 2002.1) will be posted on the DFW website and linked to the EOE website.*

DCR: Division of Water Supply Protection: *Each Land Management Plan prepared for the DWSP watersheds includes an Executive Summary, and these summaries and the full text of the plans are included on the DWSP website as downloadable .pdf files. The one exception is the Quabbin LMP, which is due for revision in 2004-2005. This plan was produced in an earlier computer era and graphics were not digital. We have therefore decided to hold off on posting Quabbin plans until the current update is completed. It is, however, widely available in hard copy.*

Condition DEM/DFW 2002.7: Within 2 years of award of certification, DEM and DFW must designate and delineate HCVF¹⁰ areas and develop a plan for management of these areas.

¹⁰ Guidance on defining High Conservation Value Forests can be found in the document "Identifying High Conservation Values at a national level: a practical guide" available from www.proforest.com.

DFW: No formal progress on this condition to date, but the DFW Forestry Program has discussed creating an in-house committee with representatives from the DFW Natural Heritage and Fisheries to identify HCVF areas that support resources such as rare species and wild trout stocks.

Condition DEM/DFW 2002.8: Within 3 years of award of certification, DEM and DFW must identify, designate, and map an ecological reserve system of representative forest communities and age classes, as well as ecologically unique areas including sensitive habitats for plants and animals.

DCR: Bureau of Forestry: Work is underway to meet this condition. A statewide effort is ongoing to develop criteria and map potential reserves.

DFW: Is working with the Bureau of Forestry and the Division of Water Supply Protection to create a system of reserves through an open, public process that will likely result in at least 20% of state lands being designated as reserves.

Condition MDC 2002.9: Within 1 year of award of certification, MDC must determine what percentage of MDC lands falls under HCVF category 4 for watershed values and then prepare an amendment to management plans that formally designates HCVF areas and describes how management of these lands is consistent with maintaining or enhancing HCVF attributes.

DCR: Division of Water Supply Protection. In discussions with SCS it was agreed that 100% of these water supply protection properties meet the criteria for Category 4 HCVF. It was also agreed that the detailed Land Management Plans that have been prepared for these watersheds meet the HCVF requirements for identifying ways in which management of these lands maintains and enhances HCVF attributes. As these plans are updated, direct reference to HCVF will be included.

Condition DEM 2002.10: Within 1 year of award of certification, DEM needs to implement a program to train staff to recognize rare and sensitive flora and fauna and habitat features (nest trees, vernal pools, etc.) and/or to diversify the Department's staff to respond to this need. Note: In addition to improved overall management of non-timber resources this condition is intended to foster an enhanced working relationship with the Natural Heritage and Endangered Species Program.

DCR: Bureau of Forestry: Meetings have been held and training available to all agencies is planned for June 2004 and on an annual basis. The bureau has emphasized coordination and communications with Natural Heritage. Working relationships have improved since the audit.

Condition DEM/DFW 2002.11:

Phase I

Within 6 months of award of respective certifications, develop and implement a work plan to address unmarked property boundaries. All boundaries must be marked on active timber sales prior to harvesting where other landowners abut the sale area.

DCR: Bureau of Forestry: Boundary work has been initiated and a contract has been executed to partially fulfill this condition.

DFW: The Forest Program Leader is working in-house with the DFW Realty Section to coordinate creation of an Access database to track all boundary segments that compose the approximately 2,000 linear miles of DFW boundary. DFW plans to review each of the 265 DFW properties on a boundary segment by boundary segment basis in order to build the database. Once the status of boundary segments are summarized, priorities can be set for locating and marking boundary lines in the field. The Forestry Program has provided each of the five DFW District offices with a GPS unit to record boundary points in the field.

Phase II

All boundaries that are not in legal dispute must be marked within 5 years of certification. Additionally DEM/DFW must begin the process of clarifying the legal status of those boundaries that are in dispute, and actions to resolve these disputes must be underway by the end of the 5-year period.

DFW: No progress to date on this condition.

Condition EOEA - DEM/DFW 2002.12:

Within 1 year of award of certification, EOEA working with the appropriate Department, must develop and implement a work plan to identify and begin to resolve disputed ownership issues, especially where dispute and lack of authority leads to resource damage; e.g., land to the north of Little Widgeon Pond on Myles Standish State Forest.

DFW: No formal progress to date on this condition, but building the Access database described under condition 2002.11 will identify disputed boundary lines.

Condition DEM/DFW 2002.13: Within 1 year of the respective award of certification, DEM and DFW must develop and implement work plans to manage unauthorized OHV use. (Consider \$5 annual vehicle fee to fund work). Note: SCS is aware that enforcement of illegal OHV use is under the jurisdiction of the Environmental Police, thus the work plan(s) should focus on improved cooperation with Environmental Police and or other control mechanisms that discourage illegal use.

DFW: No formal progress to date on this condition, but see Condition 2002.4.

Condition DFW/DEM/MDC 2002.14: Considering the immediate safety and productivity concerns of an aging fleet of vehicles, agencies must work with EOEA and OVM to upgrade vehicle fleet. Annual reports on the status of upgrading the fleet must be provided throughout the 5-year certification period.

DCR: Bureau of Forestry: An inventory has been completed identifying vehicle condition and replacement needs. A number of vehicle have identified as unfit for use and sidelined. Temporary replacements have been made. Recently, two 4x4 pick-up trucks have been added to the fleet, providing an improvement to management forester transportation. This is one of the bureaus top priorities. An updated inventory of all bureau fleet needs is being attached with this report..

DFW: Three state vehicles are dedicated to the DFW Forestry Program, one to the Forest Project Leader (1992 Chevy S-10 with 152,000 miles), and one to each of the two Management Foresters (1993 Ford 4x4 with 85,000 miles and a 2000 Ford Ranger 4x4 with 48,000 miles). All contracted vendors participating in the DFW forest inventory are reimbursed for supplying their own vehicles. Only one of the three DFW vehicles is in need of replacement. The 1992 Chevy S-10 has been scheduled for replacement for the past two years. However, DFW has no funding for new vehicles, and to date DFW has been unsuccessful in acquiring former Environmental Law Enforcement vehicles that have been replaced using Federal Homeland Security funds. The 1993 Ford 4x4 was recently fully repaired at a cost of \$1,000, and if maintained, should be serviceable for at least the next two years.

DCR/DWSP: The following table indicates the vehicles assigned to the Forestry Staff within the DCR DWSP Watershed Bureau. All vehicles used by the forestry staff are operational, but all vehicles on this list with the exception of MDC 915 are overdue for replacement and should be replaced as soon as fiscally possible. Because of the backlog of replacement vehicles needed within the agency many of these vehicles may be on the second round of replacements. A timetable for replacement is unknown at this time as the Department is undergoing broad reorganization changes.

MDC 982	1988	Dodge	Pickup	77,536	Greg Buzzell	Wachusett - supervisor
MDC 988	1992	GMC	SUV	95,284	Brian Keevan	Wachusett
MDC912	1991	Chevrolet	Pickup	95,000	Bruce Spencer	Quabbin - supervisor
MDC915	1998	Chevrolet	Pickup	74,000	Herm Eck	Ware River
MDC962	1996	Chevrolet	Pickup	68,000	Steve Ward	N. Quabbin
MDC963	1996	Chevrolet	Pickup	64,000	Dennis Morin	S. Quabbin

Condition DEM/DFW/MDC 2002.15

Within 1 year of respective award of certification, agencies must work with EOEA to develop and implement a safety system that includes performance measures, record keeping of injury rates, and costs for personal injury and vehicle accidents of Commonwealth employees.

DCR: Bureau of Forestry: A safety program has been initiated. Health and Safety Handbooks have been ordered. A system to track safety performance including the reporting of personal injuries and vehicle accidents has been instituted.

DFW: No progress to date on this condition.

DCR/DWSP: Inquiries have been made and a report will be provided shortly. The safety system will be subject to changes in personnel and functions as a result of reorganization.

Condition DEM/DFW 2002.16: Within 1 year of the respective award of certification, DEM and DFW must implement a training program to recognize and protect historical and pre-historical archeological sites. Note: In addition to helping overall management of cultural resources this condition should improve cooperation with the Mass. Historical Commission.

DCR: Bureau of Forestry: Meetings have been held and training for all agencies is planned for June 2004 and on an annual basis. The bureau has emphasized coordination and communications with DCR archeologist and Mass. Historical Commission state archeologist. Working relationships have improved since the audit.

DFW: Is participating in training with the two DCR agencies.

Condition MDC/DEM/DFW 2002.17: Before selling roadside logs or other non-standing timber sales, as FSC certified, each agency must develop a written procedures document that describes how the operation will meet the FSC chain-of-custody requirements. This document must address FSC's six principles for chain-of-custody certification, and must be completed as well as reviewed and approved by SCS.

DCR/DWSP: A draft document has been completed and is waiting for final confirmation from contract supervisors.

DFW: No progress to date on this condition, but DFW does not sell non-standing timber products cut from its lands.

APPENDIX 1: Bureau of Forestry
District State Forest Management Planning
Public Involvement Strategy:
October 31, 2003

The following is the Bureau of Forestry's approach to public involvement for District State Forest Management Planning.

The following affected individuals, interests, agencies, and non governmental agencies should be contacted and invited to participate in State Forest Planning. Each district planning effort will have a contact list developed in consideration of but not limited to those parties and individuals listed below. The Bureau's intention is to seek interested public's and invite them to participate within reasonable limits.

Native Americans-Indian Tribes:

Identify and coordinate with Native American-Indian Tribes who have lands or rights within or adjacent to State Forests or interest in the management State Forests.

Non-governmental Organization

SCS Interim Report and GEIR report list
State Conservation and Environmental Organizations
Berkshire Natural Resource Council
Mass Land Trust Coalition
Mass Watershed Coalition
Regional and local groups and interests such as:

Rails to Trails
Mtn. Bike Assoc
Local Application Mtn. Club
ATC
Snowmobile Clubs

Professional Organizations such as Ma Assoc of Professional Foresters and Society of American Foresters
Rural Conservation and Development
State Forest Advisory and Friends Groups

Universities:

Harvard University (Forest)
UMass
Mtn Wachusett
Brandies-(Brian Donahue)
Essex Agriculture Tech

Industry and Businesses:

Chamber of Commerce
Regional Wood Industry and user organizations
Large Private Industrial Landowners
Guilds and Associations
Other interested regional and local businesses

Federal Government:

Forest Service
Army Corp of Engineer (local office)
Fish and Wildlife Service
NRCS

State and Local Government:

SCS Interim Report for State Government
Town and county local governments
Mass Assoc. of Conservation Districts
Elected Officials (local and those on state natural resource committees)
Planning Commissions
Local and Municipal Watershed Supply
Mass Historical Commission

Individuals:

Post legal notice in newspapers, local newsletters
Post notice in town halls

Notification Contacts: Media, newsletters, etc

Local and State-Regional Newspapers, TV and Radio
Cable Network Community Calendar
Publications such as watershed, industry, recreation, environmental groups etc.
Bureau of Forestry Web

Kick-off Notice

The Bureau will initiate district plans through letters, news releases, formal public notices, and posting information on the web site. An "Invitation to participate" will include the following information.

Explain what we are doing.

Identify Eco-regional issues

Identify how to be involved (Public Involvement Process)

Provide the information that is available today such as (ecoregional guidance) and information that will be made available in the future such as (draft and final district plans)

Include a response form for continued involvement in the process and to provide an opportunity for submitting initial issues or opportunities.

Identify decision to be made and responsible official.

Draft Plan Meeting and Comment Period:

Through mailings, public notices, web, media announcements, and posting of information make draft district state forest management plans available and schedule public meeting(s).

Establish due date for public comments

Prepare Final Plan:

Address comments through changes in the draft plan, in the appendix with rationale.

Notice and availability of Final Plan.

General notice of final plan to those who have commented or attended the plan of availability of final plan.

Post final plan on the Bureau's Web site

Make plan available at town offices and libraries